

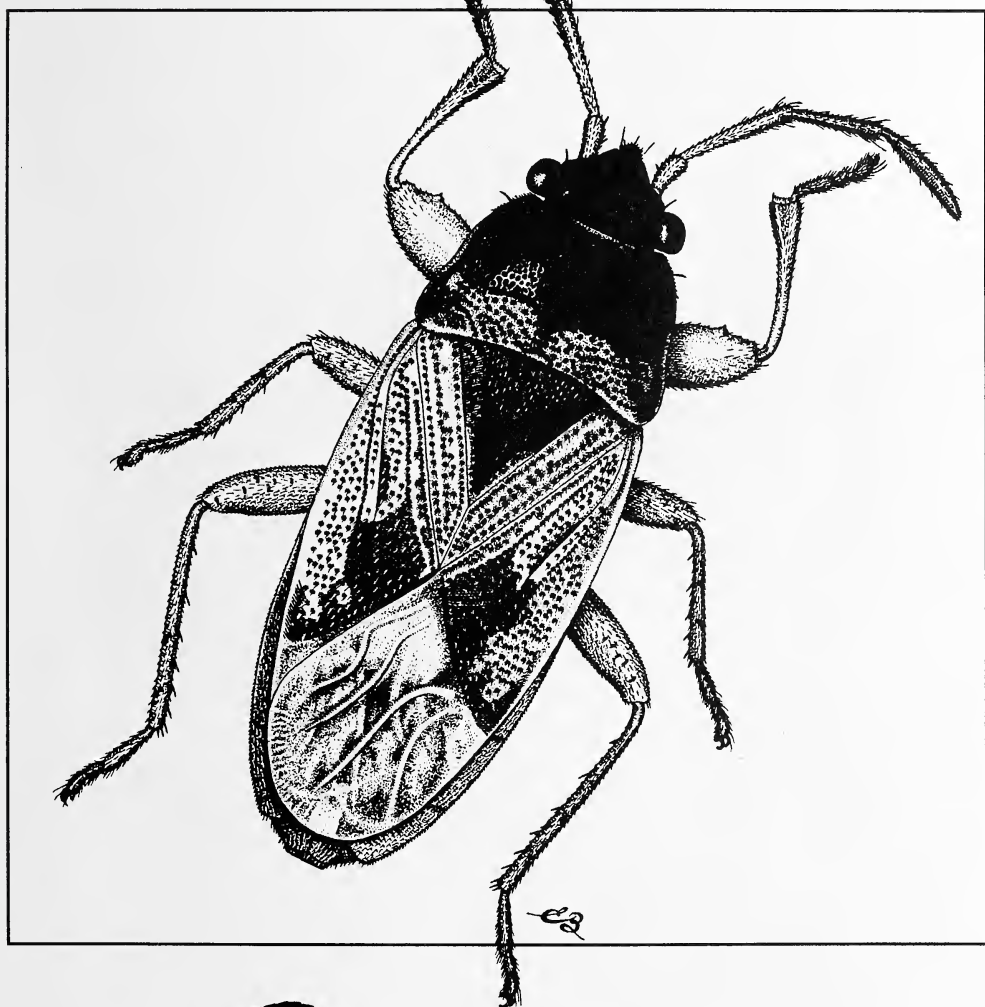
QL
221
B8S43
1994
ENT

Occasional Paper 2
Entomological Society of British Columbia

An annotated systematic list of the potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia

Issued April 1994

ISSN #0071-0733



ESBC

Entomological Society
of British Columbia

COVER: Female of the seed bug *Cordillonotus stellatus* Scudder (Heteroptera: Lygaeidae) [Total length 4.90mm]. A potentially rare and endangered insect, in Canada known only from two females, one from Summerland and one from Victoria. Also reported from California, Oregon and Washington (Scudder, G. G. E. 1984. Can. Ent. 116: 1300). Original pen and ink drawing by Edie Bijdemast, reproduced by permission of the *Canadian Entomologist*.

see next
page

Contents

| Occasional Paper 2 | Issued April 1994 | ISSN #0071-0733 |
|-----------------------------------|-------------------|-----------------|
| Abstract | | 3 |
| Introduction | | 3 |
| Taxonomic List | | 4 |
| Phylum PORIFERA | | 4 |
| Phylum CNIDARIA | | 4 |
| Phylum PLATYHELMINTHES | | 4 |
| Phylum NEMERTEA | | 4 |
| Phylum GASTROTRICHA | | 4 |
| Phylum ROTIFERA | | 4 |
| Phylum NEMATODA | | 4 |
| Phylum NEMATOMORPHA | | 5 |
| Phylum MOLLUSCA | | 5 |
| Class GASTROPODA | | 5 |
| Order MESOGASTROPODA | | 5 |
| Order BASOMMATOPHORA | | 6 |
| Class BIVALVIA | | 7 |
| Order UNIONOIDA | | 7 |
| Order VENEROIDA | | 7 |
| Phylum ANNELIDA | | 7 |
| Class POLYCHAETA | | 7 |
| Class HIRUDINOIDEA | | 7 |
| Order RHYNCHOBDELLAE | | 8 |
| Order ARHYNCHOBDELLAE | | 8 |
| Class OLIGOCHAETA | | 8 |
| Order HAPLOTAXIDA | | 9 |
| Phylum TARDIGRADA | | 9 |
| Class EUTARDIGRADA | | 9 |
| Order MACROBIOTIDA | | 9 |
| Phylum BRYOZOA | | 9 |
| Phylum ARTHROPODA | | 10 |
| Subphylum CHELICERATA | | 10 |
| Class ARACHNIDA | | 10 |
| Order SOLPUGIDA | | 10 |
| Order SCORPIONIDA | | 10 |
| Order ARANEAE | | 10 |
| Order PSEUDOSCORPIONIDA | | 18 |
| Order OPILIONES | | 18 |
| Subclass ACARI | | 18 |
| Order ACARIFORMES | | 18 |
| Subphylum (Class) CRUSTACEA | | 20 |
| Order AMPHIPODA | | 20 |
| Order ISOPODA | | 21 |
| Subphylum MYRIAPODA | | 21 |

| | |
|------------------------------|----|
| Class DIPLOPODA | 22 |
| Order POLYZONIIDA | 22 |
| Order JULIDA | 22 |
| Order CHORDEUMATIDA..... | 22 |
| Order POLYDESMIDA..... | 22 |
| Class CHILOPODA..... | 23 |
| Order GEOPHILIDA..... | 23 |
| Class PAUROPODA | 23 |
| Order TETRAMEROCERATA..... | 23 |
| Class SYMPHYLA | 23 |
| Subphylum HEXAPODA | 24 |
| Class PROTURA | 24 |
| Class COLLEMBOLA | 24 |
| Order ARTHROPLEONA..... | 24 |
| Class DIPLURA | 25 |
| Class INSECTA..... | 25 |
| Subclass ARCHAEOGNATHA | 25 |
| Order MICROCORYPHIA | 25 |
| Subclass ZYGENTOMA | 25 |
| Order THYSANURA | 25 |
| Subclass PTILOTA | 26 |
| Infraclass PALAEOPTERA..... | 26 |
| Order EPHEMEROPTERA | 26 |
| Order ODONATA | 26 |
| Infraclass NEOPTERA | 28 |
| Order PLECOPTERA..... | 28 |
| Order DICTUOPTERA | 31 |
| Order GRYLLOPTERA | 31 |
| Order ORTHOPTERA..... | 32 |
| Order PSOCOPTERA | 32 |
| Order HETEROPTERA | 32 |
| Order HOMOPTERA | 40 |
| Order THYSANOPTERA..... | 43 |
| Order MEGALOPTERA | 44 |
| Order RAPHIIDIOPTERA..... | 44 |
| Order NEUROPTERA | 44 |
| Order COLEOPTERA..... | 45 |
| Order MECOPTERA..... | 54 |
| Order DIPTERA | 54 |
| Order LEPIDOPTERA | 60 |
| Order TRICHOPTERA | 67 |
| Order HYMENOPTERA | 72 |
| Table 1 | 79 |
| Acknowledgments | 80 |
| Notes | 80 |
| References | 81 |

An annotated systematic list of the potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia

G.G.E. SCUDDER

DEPARTMENT OF ZOOLOGY
UNIVERSITY OF BRITISH COLUMBIA
VANCOUVER, B. C. V6T 1Z4

ABSTRACT

This paper provides an annotated systematic list of the endemic and potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia. A total of 168 endemic species are listed, and 447 of the species that occur only in British Columbia in Canada are included. In addition, 203 of the more widely distributed species are listed as potentially rare and endangered in the province, mostly on the basis of limited occurrence or restriction to obviously endangered habitats or ecosystems.

The list is based on published information, and information provided by systematic experts. Museum collections were not examined, so additions and correction to the list are expected. Additional study and research is suggested.

INTRODUCTION

The recently ratified Convention on Biological Diversity (United Nations Environment Programme 1992) requires each contracting party to identify components of biological diversity important for conservation. Among those components listed for special attention are endemic and threatened species. The province of British Columbia has initiated a number of biodiversity studies (e.g. Murray et al. 1993) and is developing land management guidelines. These guidelines will include provisions to maintain the habitats of threatened species (Anon [1992]). In order to accomplish these objectives, it is necessary to assess which species are endemic, rare and threatened.

I recently completed an investigation on "Terrestrial and freshwater invertebrates of British Columbia: rare species status and priorities for inventory" (Scudder 1994). This study called for priorities to be established against a matrix of the ecoregions (Demarchi et al. 1990) and habitats within the biogeoclimatic subzones of the province (Meidinger & Pojar 1991). In addition, a short list of taxa known to be very rare or threatened at the provincial or national level was requested.

In attempting to fulfill these requirements, emphasis was placed on the occurrence of what currently are listed as endemic species in British Columbia, and also on what may be rare and endangered species in the province. Time constraints meant that these had to be assessed by examining available catalogues, handbooks, lists and revisionary publications. Preliminary lists so obtained were then sent to experts on each group, for comment, corrections and additions. For the most part, collections were not consulted, although this is clearly necessary in the future.

The annotated list presented here is the summary of this study. It lists the potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia, and because of their dominance, most of those listed are insects.

It is expected that further inventory work and research on collections will cause the list to be modified. However, this publication summarizes our current knowledge and draws attention to the gaps in our systematic information.

Of particular note, are the species that are listed as endemic to the province, most of which occur in areas that were glaciated during the Pleistocene. Endemics are unlikely to have arisen

QL
221
B8 S43
1994
ENT

in the unglaciated areas, and so their lack of recorded occurrence elsewhere obviously indicates that much more research is needed to assess their total range and distribution.

Parasitic invertebrates are excluded. Data on these are scarce. Parasites are often dispersed by their hosts, but may not occur throughout the whole of their host's range.

The list is published at this time, in the hope that it will encourage much more study and research on this component of the provincial biodiversity. To facilitate such study, I provide a brief summary of relevant publications at the beginning of each higher category taxon: some additional references can be found in Arnett (1985) and Clifford (1991). The systematic arrangement of taxa considered herein is based on Parker (1982) and Scudder et al. (1979). Table I presents a numerical summary of the list.

The localities cited can be found in the Gazetteer for British Columbia (Canadian Permanent Committee on Geographical Names 1985), or the Canadian Geographical Names Database (CGNDB), obtainable from the National Atlas Information Service of Energy, Mines and Resources Canada. A few places (e.g. Gale) could not be traced.

TAXONOMIC LIST

** = Endemic to B.C.; * = B.C. only in Canada, but recorded elsewhere in North America.

Phylum PORIFERA

The freshwater sponges in North America have been considered and keyed by Frost (1991). None of those that occur in B.C. can be considered rare or endangered (H. M. Reiswig, in litt.).

Phylum CNIDARIA

The freshwater coelenterates belong to the Class Hydrozoa, and include both hydras and jellyfish. A taxonomic key to the genera in North America is given by Slobodkin & Bossert (1991). None of those in B.C. is rare or endangered.

Phylum PLATYHELMINTHES

The turbellarians in B.C. have not been studied in detail. However, none of those recorded is rare or endangered. A key to the North American freshwater genera is given by Kolasa (1991), while the terrestrial species in North America are keyed by Ball & Sluys (1990).

Phylum NEMERTEA

Of the three freshwater North American species keyed by Kolasa (1991), none occurs in B.C. as far as is known.

Phylum GASTROTRICHA

Very little is known about the freshwater gastrotrichs in B.C. Strayer & Hummon (1991) provide a key to genera, and note that they are relatively easy to identify to this level, but very difficult to identify to species. None can be listed as rare or endangered in B.C.

Phylum ROTIFERA

The Rotifers of Canada have been recorded by Chengalath (1984). Eighty-two named species are reported from B.C., 13 being only in B.C. None is rare or endangered (R. Chengalath, in litt.). A key to families is provided by Wallace & Snell (1991), and the genera are keyed by Edmondson (1959) and Pennak (1989).

Phylum NEMATODA

There is little information on free-living freshwater and terrestrial roundworms in B.C., so no attempt can be made to assess rarity. The majority of the freshwater genera have been keyed by Poinar (1991), and the common terrestrial genera are keyed by Freckman & Baldwin (1990).

Phylum NEMATOMORPHA

A number of hairworms have been recorded from B.C., but none of the freshwater species appears to be rare or endangered. Poinar (1991) provides a taxonomic key to the North American genera.

Phylum MOLLUSCA

The latest checklist of molluscs for Canada is La Rocque (1953). The nomenclature in La Rocque (1953) is now out of date, and the publication does not give entries helpful for this survey. The history of nonmarine malacology in British Columbia is reviewed by Drake (1962), who lists collectors and disposition of collections. The Canadian Museum of Nature (CMN) has the reports by R.J. Drake (1960-1962) on *Mollusca in Archaeology and the Recent* vols. 1-7, mimeographed and distributed from the Department of Zoology at UBC. These were surveyed, but contain no records.

R.J. Drake made a number of collections in British Columbia for the CMN in the early 1960's. He left no lists in the files of the CMN and contract reports cannot be located.

Currently, the nomenclature for Mollusca follows Turgeon et al. (1988). The modern systematic arrangement is according to Abbott & Boss (1989). The genera of terrestrial Gastropoda in North America are keyed by Burch & Pearce (1990).

Turgeon et al. (1988), Clarke (1970) and Smith (1970) consider the endangered and threatened land snails of North America, but they do not list any species that occur in B.C. At the moment, it is not possible to assess which of the terrestrial Mollusca in B.C. might be rare or endangered.

The main works for identification of North American freshwater molluscs are Brown (1991), Burch (1975, 1982, 1989), Clarke (1981), Harrington (1962), McMahon (1991) and Pennak (1989). The best reference for the freshwater Mollusca of Canada is Clarke (1981). From this publication it is possible to put together a list of species that might be considered rare and endangered in B.C.

Taylor (1970) considered the endangered and threatened freshwater molluscs of western North America. No species are listed as rare or endangered from B.C., although *Physella columbiana* and *P. virginea* are listed as both rare and endangered in the United States.

Clarke (1976) identifies six species or subspecies of freshwater molluscs that are endangered, and reports a new undescribed species of *Physa* from the Liard Hot Springs. He notes that this is known only from a ten-foot by one-foot cool vegetated portion of the outlet of Liard Hot Springs. He states that if that spring is further "developed" the species will become extinct. The species has since been described by Te & Clarke (1985). Commonly known as the Hotwater *Physa*, it is clearly rare and endangered, if it is a valid species. In addition, 13 other freshwater species may be rare and endangered in the province.

Class GASTROPODA

Order MESOGASTROPODA

Family Valvatidae

- * *Fluminicola virens* (Lea) [Olympia pebble snail]

Listed as *Lithoglyphus virens* from Kootenay and Wigwam rivers in Clarke (1981). Burch (1989) cites the distribution as Willamette, lower Columbia, upper Deschutes and Umpaque rivers, Oregon; Olympia and San Juan Co., WA; Vancouver I.: for more recent records of the species in the northwestern United States see Neitzel & Frest (1990).

- * *Juga plicifera* (Lea) [Pleated juga]

Listed from southern B.C. in Clarke (1981). Burch (1989) cites the distribution as larger streams in Oregon and Washington.

Order BASOMMATOPHORA

Family Acroloxidae

Acroloxus coloradensis (Henderson) [Rocky Mt. capshell]

Listed as rare by Clarke (1981) with record from Purden L., near Prince George. Burch (1989) cites the distribution as larger lakes in the Rocky Mts. in Colorado, Montana and Alberta; and a few ponds and lake localities in northern Quebec and eastern Ontario.

Family Lymnaeidae

* *Fisherola nuttalli* (Haldeman) [Shortface lanx]

Listed as *Lanx* (*Fisherola*) *nuttalli* in Clarke (1981) with record from Columbia R. at Trail. Burch (1989) cites *F. nuttalli kootaniensis* (Baird) from Spokane R. (e. WA.) and Kootenay R.

Fossaria truncatula (Müller) [Attenuate fossaria]

B.C. specimens in the CMN are from three localities only in B.C.: Duck L., 18 km N. Creston, on Hwy 3A, 49°13'N 116°36'W, 9.viii.1972 (B.T. Kidd); stream nr. Bridesville, vii.1961 (W.M. Draycot); shallow stream nr. Osoyoos L., vi.1961 (W.M. Draycot).

Clarke (1981) reports this species also from Christina L. Burch (1989) lists the distribution as Europe, n. Asia, and portions of Alaska and the Yukon Territory.

Family Physidae

* *Physella columbiana* (Hemphill) [Rotund physa]

In B.C. known only from a single locality: Christina L., e. side of lake, Englishman Bay, 49°06'N 118°18'W, 8.viii.1972 (A.H. Clarke & B.T. Kidd). Burch (1989) lists the distribution as Wyoming and Montana west to Washington.

* *P. hordacea* (Lea) [Grain physa]

In B.C. known only from a single locality: Long L., Wellington, Nanaimo. Burch (1989) lists the distribution as B.C., Washington and Oregon.

* *P. lordi* (Baird) [Twisted physa]

There are five locality records for this species in the CMN: Allison Cr., between Laird & McCaffrey Lks., 18 km N. Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke & B.T. Kidd); Great Central L., 8 km N. Sproat L., on Hwy 4 & 18 km NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 6 km S. Ok. Falls, 3.viii.1973 (AHC & DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (in litt. via P. Lambert) are as follows: Osoyoos L. (J.K. Lord) (British North American Boundary Commission, 1859-1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., S.E. side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gives the distribution as B.C. south to Montana, Nevada and California.

* *P. propinqua nuttalli* (Lea) [Rocky Mt. physa]

CMN has material standing under *P. nuttalli* from Sumas Prairie and Small L., 11 km E. Greenwood. Other material standing under *P. propinqua* is from Sturgeon L., 13.ix.1879; Similkameen R., 1905 (Macoun); nr. Granby R., Grand Forks, 28.viii.1960 (W.M. Draycot).

Burch (1989) lists *P. propinqua nuttalli* distribution from B.C. south to Montana, Wyoming and California. *P. p. propinqua* is not listed from B.C.

* *P. virginea* (Gould) [Sunset physa]

Material in the CMN is from Caribou Rd.; Swan L., 3 km N. Vernon, 50°18'5"N 119°16'W, 12.viii.1972 (A.H. Clarke & B.T. Kidd); Slough at Indian Reserve, 6 km S. Creston, 49°25'N 116°31'W, 9.viii.1972 (A.H. Clarke & B.T. Kidd); Laird Hot Springs, 19.viii.1973.

Burch (1989) lists the distribution as B. C. south to California.

** *P. wrighti* Te & Clarke [Hotwater physa]

Alpha stream, Laird Hot Springs, 59°22'N 126°03'W, 20.viii.1979 (A.H. Clarke) (Te & Clarke 1985).

This is the type locality. The species is endemic to B.C. and known only from the type locality. This may be the same as *P. gyrina* (Say) (D.W. Taylor, in litt.).

Class BIVALVIA

Order UNIONOIDA

Family Unionidae

* *Gonidea angulata* (Lea) [Western ridge mussel]

Material in the CMN is from only three localities: Okanagan R. at Penticton; Vaseux L., 6.viii.1972 (A.H. Clarke); Okanagan Falls campsite, 19.viii.1960 (R.J. Drake).

Additional records of *G. angulata* provided by D.W. Taylor (in litt. via P. Lambert) are as follows: Okanagan R., at exit from Okanagan L. at Penticton, viii.1906 (G.E. Winkler) [Cited in Whiteaves 1906]; Okanagan R., Okanagan Falls campsite (now park), 12.viii.1963 (D.W. Taylor); Osoyoos L., N. side of Haynes Point Park, 16.viii.1990 (D.W. Taylor).

According to Clarke (1981) the species occurs in the Columbia R. system (Okanagan and Kootenay Rivers) in B.C. and south in the Pacific drainage to southern California.

Order VENEROIDA

Family Sphaeriidae

* *Sphaerium patella* (Gould) [Rocky Mt. fingernail clam]

Material in the CMN is from Burnaby and L. Abbotsford only. The species occurs from southern B.C. to Idaho and northern California in the Pacific drainage (Clarke 1981).

Pisidium insigne Gabb [Tiny peaclam]

Material in the CMN is from only three localities: Long L., Wellington, 24.ix.1908 (C.H. Young); Jones Cr., 1.6 km W. Laidlaw, 49°18'N 121°38'W, 4.viii.1972 (A.H. Clarke & B.T. Kidd); stream nr. Bridesville, vii.1961 (W.M. Draycot)

In Canada known only from Prince Edward I., southern Ontario and southern B.C., but in the United States the species occurs in the northern states and south in the Rocky Mountains to Arizona and New Mexico (Clarke 1981).

Phylum ANNELIDA

Class POLYCHAETA

Three species of polychaete worms have been recorded in freshwater in British Columbia (Davies 1991), but none is rare or endangered. Davies (1991) provides a key to species.

Class HIRUDINOIDEA

The distribution of freshwater leeches in Canada has been summarized by Davies (1973,

1991) and Madill (1985), and the species have been keyed by Davies (1971, 1991) and Klemm (1982). Madill (1985) and Davies (1991) list nineteen species from B.C., three of which do not occur elsewhere in Canada. Since then, one other species has been added to the B.C. list (Oosthuizen & Davies 1993). Only five species might be considered rare in B.C. (R.W. Davies, in litt.).

Order RHYNCHOBDELLAE

Family Glossiphoniidae

Batrachobdella picta (Verrill)

In B.C., recorded only from Beaver L. (Davies 1973). Elsewhere reported from Arkansas, Colorado, Connecticut, Idaho, Illinois, Kansas, Louisiana, Manitoba, Massachusetts, Michigan, Missouri, New York, North Carolina, North Dakota, Ohio, Ontario, Quebec, Saskatchewan, South Dakota, Texas, Utah, Virginia, Wisconsin and Wyoming (Davies 1991).

Marvinmeyeria lucida (Moore)

In B.C., recorded only from small freshwater bodies in the Springhouse area of the Cariboo, and Becher's Prairie in the Chilcotin (Scudder & Mann 1969). Elsewhere reported from Alaska, Manitoba, Michigan, Ontario, Quebec and Saskatchewan (Davies 1991).

Theromyzon tessulatum (Muller)

In B.C., recorded only from Echo L. (Davies 1973). Elsewhere reported from Alaska, Colorado, Manitoba, Nova Scotia, Quebec and Saskatchewan (Davies 1991).

Family Piscicolidae

Piscicola punctata (Verrill)

In B.C., recorded only from Kalamalka L. and Okanagan L. (Clemens et al. 1939). Elsewhere reported from Alberta, Connecticut, Georgia, Illinois, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, New Jersey, New York, North Carolina, Nova Scotia, Ontario, Pennsylvania, Quebec, Rhode I., Saskatchewan, South Dakota, Tennessee, Virginia and Wisconsin (Davies 1991).

Order ARHYNCHOBDELLAE

Family Erpobdellidae

* *Dina anoculata* Moore

The only Canadian record is a single specimen from a small lake (GR3) along the Gang Ranch Rd. (Scudder & Mann 1969), west of 70 Mile House. The species is reported from California and Oregon (Davies 1991).

Class OLIGOCHAETA

The freshwater and terrestrial oligochaetes that occur in B.C. have been keyed to genus by Brinkhurst & Gelder (1991), Dash (1990), Fender & McKey-Fender (1990), McKey-Fender et al. (1994) and Schwert (1990). None of the freshwater species in B.C. is rare or endangered (R. O. Brinkhurst, in litt.).

Although it has often been stated that Canada has no native earthworms, this is not correct. Several native species occur in British Columbia, and are keyed by McKey-Fender et al. (1994). All are probably endangered because of the elimination of our west coast old growth forests (V.G. Marshall, in litt.).

Order HAPLOTAXIDA

Suborder LUMBRICINA

Family Lumbricidae

** *Bimastos lawrenceae* Fender

An endemic species, known only from Vancouver I. (Douglas Peak, Museum Junction areas) (McKey-Fender et al. 1994).

Family Megascolecidae

* *Arctiostrongylus perrieri* (Benham)

Described originally from Massett in the Queen Charlotte Islands, this species is known from Moresby Camp, Vancouver I. and adjacent islets of Kyoquot Sound (McKey-Fender & Fender 1982; McKey-Fender et al. 1994). It also occurs to the south along the coast and in the Puget Trough of Washington, and in Oregon west of the Cascade Range summit south to Coos Bay (McKey-Fender et al. 1994).

* *A. vancouverensis* McKey-Fender

Described from western Vancouver I. (MB Lands 8145, MB Lands Klanawa Main, Sarita Flood Plain, Klanawa R. E. of Bamfield, Darling, Darling Main Line, Klanawa Road, and near Frederic L.) (McKey-Fender et al. 1994). Also known from Carnation Cr. and the Olympic Peninsula of Washington state (McKey-Fender et al. 1994).

* *Toutellus oregonensis* (Smith)

So far recorded only from western Vancouver I. (Cameron Division of MB Lands, E. of China, W. of Douglas Peak) (McKey-Fender et al. 1994). The species is widespread in Oregon and Washington.

Phylum TARDIGRADA

Early records on the occurrence of tardigrades in North America has been summarized by Mathews (1938). Recently, a survey of tardigrades on Vancouver I. was undertaken by R.D. Kathman and reported in Kathman (1989, 1990a) and Kathman & Dastych (1990). New species have been described from Vancouver I. by Kathman & Nelson (1989) and Kathman (1990a, 1990b).

A partial tabular checklist of B.C. tardigrades is provided by Behan-Pelletier (1993a). A key to most genera is included in Nelson & Higgins (1990). To date, 49 species are reported from B.C., three of which are endemic as far as is known.

Class EUTARDIGRADA

Order MACROBIOTIDA

Family Hypsibiidae

** *Isohypsibius woodsae* Kathman

Known from Mt. Arrowsmith (Kathman 1990b).

** *Platicrista cheleusis* Kathman

Known from Mt. Arrowsmith, Flower Ridge, Green Mt. (near Nanaimo), Mt. Landalt and Mt. Washington (Kathman 1990a).

Family Macrobiotidae

** *Pseudodiphascon arrowsmithi* Kathman & Nelson

Known from Mt. Arrowsmith & Green Mt. (near Nanaimo) (Kathman & Nelson 1989).

Phylum BRYOZOA

The freshwater bryozoans are keyed by Wood (1991). None of those recorded in British Columbia is rare or endangered.

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

A key to the Orders of Arachnida is provided by Crawford (1990).

Order SOLPUGIDA

The solpugides of North America have been reviewed by Muma (1951, 1970), and the occurrence of Canadian species summarized by Holmberg & Buckle (1970). All six species in B.C. are rare and potentially endangered.

Family Eremobatidae

Subfamily Eremobatinae

* *Eremobates gladiolus* Muma

Restricted to the South Okanagan (Scudder 1992)¹. Elsewhere reported from Oregon, Utah and Washington (Muma 1970).

* *E. scaber* (Kraepelin)

In Canada, restricted to the South Okanagan (Holmberg & Buckle 1970)¹. Elsewhere reported from Washington (Muma 1970).

** *Eremobates* sp.n.1

Recorded only from Osoyoos (Holmberg & Buckle, 1970).

** *Eremobates* sp.n.2

Recorded only from Osoyoos (Holmberg & Buckle, 1970).

Subfamily Therobatinae

* *Hemerotrecha denticulata* Muma

In Canada, recorded only from Penticton (Holmberg & Buckle, 1970). Elsewhere reported from Colorado, Nevada and Utah (Muma 1970).

** *Hemerotrecha* sp.n.

Recorded only from Oliver (Holmberg & Buckle, 1970).

Order SCORPIONIDA

A key to separate the four families found in North American deserts is given by Crawford (1990). The scorpions of the *Paruroctonus boreus* group in North America have been reviewed by Gertsch & Soleglad (1966). Only one species occurs in British Columbia, and this is rare and potentially endangered.

Family Vaejovidae

Paruroctonus boreus (Girard) [Northern Scorpion]

Restricted to the South Okanagan (Scudder 1992), with records from Keremeos, Oliver, Richter Pass, Vaseux L. (Gertsch & Soleglad, 1966), Osoyoos (Haynes Ecological Reserve) (Charles 1981) and Skaha L. (bench on east side) (Scudder, unpubl.). A specimen from Summerland is in the Royal B.C. Museum collection. Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, Utah, Washington and Wyoming (Gertsch & Soleglad 1966). The species prefers arid hillsides where the soil is dry and cracked or very rocky (Tourlotte, 1974).

Order ARANEAE

There is no complete published systematic treatment or catalogue of the spiders of Canada, although the Philodromidae and Thomisidae have been monographed by Dondale & Redner (1978), the Clubionidae and Anyphaenidae by Dondale & Redner (1982), the Lycosidae, Pisauridae and Oxyopidae by Dondale & Redner (1990) and the Gnaphosidae by Platnick & Dondale (1992). A key to the families of spiders is given by Dondale & Redner (1978) and the genera of litter Araneae is given by Dondale (1990). Recent checklists of the spiders in B.C. (West et al. 1984, 1988), record 571 species from

the province: over 50 additional species are known to occur in B.C. (R. West, pers. comm.).

There are three species endemic to B.C., but at least 108 others in the Province are rare and perhaps endangered.

Family Agelenidae

Agelenopsis actuosa (Gertsch & Ivie)

In B.C., recorded only from Vancouver I. (Goldstream, Saanich, Sidney) (West et al. 1984).

A. oklahoma (Gertsch)

In B.C., recorded only from Oliver (West et al. 1984; Scudder 1992).

* *Blabomma grandis* Chamberlin & Ivie

In Canada, recorded only from the Victoria area (West et al. 1984).

* *Calymmaria emertoni* (Simon)

In Canada, recorded only from Vancouver I. (Goldstream Prov. Park, Kyuquot, Victoria) (West et al. 1984).

* *C. monicae* (Chamberlin & Ivie)

In Canada, recorded only from Lillooet (West et al. 1984).

* *C. nana* (Simon)

In Canada, recorded only from Cowichan R. (Cabin Pool) and Victoria (32 km N.) (West et al. 1988).

* *C. suprema* Chamberlin & Ivie

In Canada, recorded only from Goldstream (West et al. 1988).

* *Cicurina intermedia* Chamberlin & Ivie

In Canada, recorded only from the Okanagan (Summerland, Vaseux L., Vernon) (West et al. 1984; Scudder 1992).

C. simplex Simon

In B.C., recorded only from Vancouver I. (Cameron L., Departure Bay, Sidney) (West et al. 1984).

Cicurina sp. near *intermedia* Chamberlin & Ivie

In B.C., recorded only from Osoyoos (West et al. 1988).

C. tersa Simon

In B.C., recorded only from Vancouver I. (Campbell R., Departure Bay, Sidney) (West et al. 1984).

* *Cybaeina minuta* (Banks)

In Canada, recorded only from Vancouver I. (Kyuquot, Tofino, Victoria) (West et al. 1984).

Cybaeota concolor Chamberlin & Ivie

In B.C., recorded only from Saanich (West et al. 1988) and Victoria as *C. nana* (West et al. 1984).

C. shastae Chamberlin & Ivie

In B.C., recorded only from Vancouver I. (West et al. 1988) and Kyuquot, Sidney (as *C. vancouverana*) (West et al. 1984).

Cybaeus signifer Simon

In B.C., recorded only from Vancouver I. (Cowichan, Kyuquot, Langford, Victoria) (West et al. 1984).

* *Ethobuella tuonops* Chamberlin & Ivie

In Canada, recorded only from Sidney (West et al. 1988).

* *Novalena intermedia* (Chamberlin & Ivie)

In Canada, recorded only from S. Pender I. and Goldstream Prov. Park (West et al. 1988).

Family Amaurobiidae

- * *Zanomys aquilonia* (Emerton)

In Canada, recorded only from Gabriola I. and Mudge I. (West et al. 1984).

Family Antrodiaetidae

- * *Antrodiaetus hageni* (Chamberlin)

In Canada, recorded only from the Okanagan (Apex Mt., Summerland, Vaseux L., Vernon) (West et al. 1984).

- * *A. pacificus* (Simon)

In Canada, recorded only from Vancouver I. (West et al. 1984).

Family Anyphaenidae

Anyphaena aperta (Banks)

In B.C., recorded only from Vancouver I. (Errington, Kyuquot, Qualicum, Victoria) (West et al. 1984).

Araneus corticorius (Emerton)

In B.C., recorded only from Vernon (West et al. 1984).

Hypsosinga groenlandica Simon

In B.C., recorded only from Apex Mt. (West et al. 1984).

- * *Metellina mimetoides* Chamberlin & Ivie

In Canada, recorded only from Vernon (West et al. 1984).

Family Clubionidae

Agroeca pratensis Emerton

In B.C., recorded only from Summerland (West et al. 1984). Elsewhere reported east to Nova Scotia, and southward to Georgia and Utah (Dondale & Redner 1982).

Castianeira alteranda Gertsch

In B.C., recorded only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from Alberta and Saskatchewan, southward to Colorado (Dondale & Redner 1982).

- * *Castianeira walsinghami* (O. Pickard-Cambridge)

In Canada, rare and recorded only from Minnie L., Prospect L., Riske Cr., Salmon Arm and Victoria (West et al. 1984). Elsewhere reported south to Oregon (Dondale & Redner 1982).

- * *C. mimula* Chamberlin

In Canada, recorded only from Summerland and Vancouver (West et al. 1984). Elsewhere reported south to California and east to Utah (Dondale & Redner 1982).

- * *Scotinella sculleni* (Gertsch)

In Canada, recorded only from Saltspring I. and Vancouver I. (Dondale & Redner 1982; West et al. 1984). Elsewhere reported from coastal Washington and Oregon (Dondale & Redner 1982).

- * *Trachelas californicus* Banks

In Canada, recorded only from Parksville (West et al. 1988). Elsewhere reported from Washington south to Baja California (Dondale & Redner 1982).

Family Dictynidae

Dictyna borealis cavernosa Jones

In B.C., recorded only from Mt. Kobau (Blades & Maier 1992).

D. coloradensis (Chamberlin)

In B.C., recorded only from Oliver (West et al. 1984; Scudder 1992).

D. olympiana Chamberlin

In B.C., recorded only from Wellington (West et al. 1984).

D. reticulata Gertsch & Ivie

In B.C., recorded only from Osoyoos (Blades & Maier 1992).

D. terrestris Emerton

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992).

Mallos niveus O. Pickard-Cambridge

In B.C., recorded only from Summerland (West et al. 1984).

Tricholathys rothi Chamberlin & Gertsch

In B.C., recorded only from Comox (West et al. 1984).

Family Dipluridae

* *Microhexera idahoana* Chamberlin & Ivie

In Canada, recorded only from Creston at 2088 m (R. West, pers. comm.).

Family Erigonidae

Eperigone dentosa O. Pickard-Cambridge

In B.C., recorded only from Mt. Kobau (Blades & Maier 1992).

* *E. holda* Chamberlin & Ivie

In Canada, rare and recorded only from the Victoria area (West et al. 1988). Elsewhere known only from Wyoming (J.H. Redner, in litt.).

** *E. paludosa* Millidge

Endemic to B.C., and known only from the type locality, Goldstream Prov. Park (Millidge 1978; West et al. 1988).

* *E. taibo* Chamberlin & Ivie

In Canada, recorded only from Vancouver I. (West et al. 1988). Elsewhere known from Arizona, Colorado and Utah (J.H. Redner, in litt.).

Glyphesis idahona (Chamberlin)

In B.C., recorded only from Oliver (16 km N. on White L. road) (West et al. 1988; Scudder 1992).

Lophomma columbia Chamberlin

In B.C., recorded only from Cameron L. and Saanich Inlet (West et al. 1988).

Scironis sima Chamberlin

In B.C., recorded only from Vancouver I. (Barkley Sound, Cowichan L., Goldstream, Mesachie L., Sidney) (West et al. 1984).

* *Scotinotylus bicavatus* Millidge

In Canada, recorded only from Manning Prov. Park (West et al. 1984). Elsewhere known only from Washington (J.H. Redner, in litt.).

** *S. bicornis* (Emerton)

Endemic to B.C. Recorded only from the type locality, Terrace (Emerton 1923; Millidge 1981; West et al. 1984).

* *S. eutypus* (Chamberlin)

In Canada, recorded only from Parksville, Sidney (West et al. 1984) and Manning Prov. Park (J.H. Redner, in litt.). Elsewhere reported from Washington and Oregon (J.H. Redner, in litt.).

Sougambus bostoniensis (Emerton)

In B.C., recorded only from Penticton (West et al. 1984).

* *Spirembolus abnormis* Millidge

In Canada, this rare species is recorded only from Wellington (West et al. 1988). It is known from only two other localities, one in Oregon and one in California (J.H. Redner, in litt.).

* *S. demonologicus* (Crosby)

In Canada, recorded only from Saanich (West et al. 1984).

- * *S. mundus* Chamberlin & Ivie
In Canada, recorded only from two localities on Vancouver I. (West et al. 1988).
- * *S. vasingtonus* Chamberlin
In Canada, recorded only from Kyuquot (West et al. 1984). Elsewhere reported only from Washington, with only females known (J.H. Redner, in litt.).
- * *Tachygyna exilis* Millidge
In Canada, recorded only from Manning Prov. Park (18 km W. of Allison Pass) and Princeton (32 km W.) (West et al. 1988). Elsewhere reported only from Washington (J.H. Redner, in litt.).
- * *T. proba* Millidge
In Canada, this rare species is known only from 18 km W. of Allison Pass in Manning Prov. Park (West et al. 1988). Elsewhere reported only from one locality in Washington (J.H. Redner, in litt.).
- Tapinocyba minuta* (Emerton)
In B.C., recorded only from Goldstream Park (West et al. 1984).
- Walckenaeria auranticeps* (Emerton)
In B.C., recorded only from Vancouver I. (West et al. 1984).
- * *W. columbia* Millidge
In Canada, recorded only from Manning Prov. Park (West et al. 1988), Goldstream Prov. Park (J.H. Redner, in litt.) and Sidney as *W. septentrionalis* (West et al. 1984).
- * *W. monoceras* (Chamberlin & Ivie)
In Canada, recorded only from Vernon (64 km E.) (West et al. 1988).

Family Gnaphosidae

- * *Drassyllus dromeus* Chamberlin
In Canada, recorded only from Keremeos, Oliver, Summerland (West et al. 1984) and Osoyoos (Scudder 1992). Elsewhere the species occurs in the United States east to Massachusetts, south to Arizona, Texas and Georgia (Platnick & Dondale 1992).
- * *D. saphes* Chamberlin
In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992). Elsewhere reported from Montana, Oregon south to Baja California (Norte) and Mexico (Platnick & Dondale 1992).
- * *Gnaphosa californica* Banks
In Canada, recorded only from Green Mt. (Keremeos), Keremeos, Osoyoos and Summerland (West et al. 1984). Elsewhere reported in Washington and south to California and New Mexico (Platnick & Dondale 1992).
- * *G. snohomish* Platnick & Shadab
In Canada, recorded only from Haney (West et al. 1988). Elsewhere reported only from Washington (Platnick & Dondale 1992).
- * *Herphyllus propinquus* (Keyserling)
In Canada, recorded only from Osoyoos (West et al. 1984; Scudder 1992). Elsewhere reported from Montana and Washington south to central Mexico (Platnick & Dondale 1992).

Micaria coloradensis Banks

In B.C., recorded only from Apex Mt. (West et al. 1988). Elsewhere reported from Alaska to Saskatchewan, south to California, Colorado and South Dakota (Platnick & Dondale 1992).

M. foxi Gertsch

In B.C., recorded only from Summerland (West et al. 1988). Elsewhere reported from Alberta, and Washington, south to California and New Mexico (Platnick & Dondale 1992).

* *M. idana* Platnick & Shadab

In Canada, recorded only from Apex Mt. and Manning Prov. Park (West et al. 1988). Elsewhere reported to occur south to California (Platnick & Dondale 1992).

M. laticeps Emerton

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Otherwise reported from Alberta, Saskatchewan to southern Ontario, south to Arkansas, Connecticut and Utah (Platnick & Dondale 1992).

M. longipes Emerton

In B.C., recorded only from Koocanusa L. (West et al. 1988). Elsewhere reported to occur east to New Brunswick, south to Arizona and Mexico (Platnick & Dondale 1992).

* *M. utahna* Gertsch

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992) and Victoria (Platnick & Dondale 1992). Elsewhere reported from Montana and Washington, south to California and Utah (Platnick & Dondale 1992).

* *Nodocion eclecticus* Chamberlin

In Canada, recorded only from Summerland (West et al. 1984) and Osoyoos (Scudder 1992). Elsewhere reported to occur south to Arizona, New Mexico, Texas, Baja California and Mexico (Platnick & Dondale 1992).

N. voluntarius (Chamberlin)

In B.C., recorded only from Summerland (West et al. 1984). Elsewhere reported from Alberta, Montana, and Washington south to Mexico (Platnick & Dondale 1992).

* *Orodassus orites* Chamberlin & Gertsch

In Canada, recorded only from Manning Prov. Park (West et al. 1984). Elsewhere reported only from western Washington (Platnick & Dondale 1992).

* *Sergiolus columbianus* (Emerton)

In Canada, recorded only from Vancouver I. (Comox, Departure Bay, Goldstream Park, Langford, Wellington) (West et al. 1984). Elsewhere reported from Montana and South Dakota, south to California and Arizona (Platnick & Dondale 1992).

Family Linyphiidae

* *Bathyphantes malkini* Ivie

In Canada, recorded only from Wellington (West et al. 1984). Elsewhere reported south to northern California (J.H. Redner, in litt.).

* *B. orica* Ivie

In Canada, recorded only from Wellington (West et al. 1984). Elsewhere reported south to California (J.H. Redner, in litt.).

Hyposinga groenlandica Simon

In B.C., recorded only from S. slope of Apex Mt. (Scudder 1992).

* *Linyphantes nehalem* Chamberlin & Ivie

In Canada, recorded only from Burnaby and Sumas (West et al. 1988).

* *L. orcinus* (Emerton)

In Canada, recorded only from Inverness (West et al. 1984).

* *L. pualla* Chamberlin & Ivie

In Canada, recorded only from Sidney (West et al. 1984) and Burnaby (J.H. Redner, in litt.).

- * *L. victoria* Chamberlin & Ivie
In Canada, recorded only from Victoria (West et al. 1984) and Burnaby (J.H. Redner, in litt.).
- Meioneta emertoni* Roewer
In B.C., recorded only from Departure Bay and Victoria (West et al. 1988).
- * *Pimoida haden* Chamberlin & Ivie
In Canada, recorded only from Kimberley, near Kuskanook (West et al. 1988).
- Sougamby bostoniensis* (Emerton)
In B.C., recorded only from Penticton (Scudder 1992).
- * *Wubana atypica* Chamberlin & Ivie
In Canada, recorded only from Cameron L. (West et al. 1984), Comox, Edge-wood, Goldstream Prov. Park and Langley (J.H. Redner, in litt.).
- * *Pardosa coloradensis* Banks
In Canada, recorded only from the Okanagan Valley (Kelowna, Orifino Mt., Osoyoos, Summerland, Vernon) (West et al. 1984). Elsewhere reported from Washington south to California, Arizona and New Mexico (Dondale & Redner 1990).
- * *P. rainieriana* Lowrie & Dondale
In Canada, recorded only from Lillooet (West et al. 1988), Mt. McLean at 600 m (Dondale & Redner 1990). Elsewhere reported from interior Washington and Oregon (Dondale & Redner 1990).

Family Mecicobothridae

- * *Hexura picea* Simon
In Canada, recorded only from the Upper Carmanah and Walbran Valley (R. West, pers. comm.). Elsewhere reported from Oregon and Washington.

Family Philodromidae

- * *Ebo parabolis* Schick
In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992). Elsewhere reported from Washington south to California, Arizona and Colorado (Dondale & Redner 1978).
- E. pepinensis* Gertsch
In B.C., recorded only from Wellington (West et al. 1984). Elsewhere reported from Alberta, Saskatchewan, the Great Lakes and Sable I., and south to California and Texas (Dondale & Redner 1978).
- * *Philodromus californicus* Keyserling
In Canada, recorded only from the South Okanagan (Osoyoos, Summerland, and Vaseux L.) (West et al. 1984; Scudder 1992). Elsewhere reported to occur south to California, and northern Mexico, and eastward to Colorado and New Mexico (Dondale & Redner 1978).
- * *P. josemitensis* Gertsch
In Canada, recorded only from southern Vancouver I. (Comox, Cowichan L., Victoria) (West et al. 1984). Elsewhere reported south to California (Dondale & Redner 1978).
- * *Tibellus chamberlini* Gertsch
In Canada, recorded only from Oliver, Summerland (West et al. 1984) and Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported to occur southward to California and Arizona (Dondale & Redner 1978).

Family Pholcidae

- * *Psilochorus* sp. near *hesperus* Gertsch & Ivie
In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992).

Family Salticidae

* *Habronattus hirsutus* (Peckham & Peckham)

In Canada, this rare species has been recorded from the South Okanagan (Green Mt., Summerland, Vernon) (West et al. 1984) and southern Vancouver I. (J.H. Redner, in litt.).

* *H. oregonensis* (Peckham & Peckham)

In Canada, recorded only from Kyuquot (West et al. 1984).

H. sansoni (Emerton)

In B.C., this rare species has been recorded from Lillooet and Osoyoos (West et al. 1984). Elsewhere recorded in Canada from one locality in Alberta.

* *Metaphidippus helene* (Banks)

In Canada, recorded only from Monte Cr. (West et al. 1984).

M. protervus (Walckenaer)

In B.C., recorded only from Summerland (West et al. 1984) and Osoyoos (Haynes Lease) (Scudder 1992).

M. vitis (Cockerell)

In B.C., recorded only from the South Okanagan (Osoyoos, Summerland) (West et al. 1984; Scudder 1992). Also known in Canada from Alberta.

Pellenes montanus (Emerton)

In B.C., recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

P. shoshonensis Lowrie & Gertsch

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992).

Phidippus purpuratus Keyserling

In B.C., recorded only from Osoyoos (West et al. 1984; Scudder 1992).

* *Sitticus absolutus* Gertsch & Mulaik

In Canada, recorded only from the South Okanagan (Summerland) (West et al. 1984), Osoyoos (Scudder 1992) and Vancouver I. (J.H. Redner, in litt.).

** *Synageles leechi* Cutler

Endemic to B.C. The species is an ant mimic and recorded only from Oliver (Cutler 1987; West et al. 1984; Scudder 1992).

Talavera minuta (Banks)

In B.C., recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

Family Theridiidae

Enoplognatha intrepida (Soerensen)

In B.C., recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

* *Theridion agrifoliae* Levi

In Canada, recorded only from Vancouver I. (Cape Cook, Tofino, Wellington) (West et al. 1984).

* *T. melanurum* Hahn

In Canada, recorded only from Vancouver I. (Kyuquot, Victoria, Wellington) (West et al. 1984).

Family Thomisidae

* *Misumenops serrensis* Schick

In Canada, recorded only from Errington, Hope and Osoyoos (West et al. 1984). Reported to occur south to California (Dondale & Redner 1978).

Thanatus altimontis Gertsch

In B.C., recorded only from Osoyoos (Blades & Maier 1992). Elsewhere reported from Saskatchewan, Washington to Nebraska, southward to California and Oklahoma (Dondale & Redner 1978).

* *Xysticus gosiutus* Gertsch

In Canada, recorded only from southern Vancouver I. (Departure Bay, Langford, Wellington) (West et al. 1984). Elsewhere reported to occur southward to California, and inland to Utah (Dondale & Redner 1978).

Order PSEUDOSCORPIONIDA

The pseudoscorpions in B.C. have not been well studied. To date only *Chelifer canroides* (L.) and *Syarinus obscurus* (Banks) have been recorded from B.C. (Hoff 1958), and three additional species (*Dactylochelifer copiosus* Hoff, *D. silvestris* Hoff and *Dendrochernes crassus* Hoff) are known from the province, but none is rare or endangered (W.B. Muchmore, in litt.). Representatives of six other genera occur or probably occur in B.C. (W.B. Muchmore, in litt.). A key to North American genera is provided by Muchmore (1990a).

Order OPILIONES

Eighteen species of harvestmen have been collected in B.C., but none of these is endemic, rare or endangered (R.G. Holmberg, in litt.). A key to the species in North America is given by Edgar (1990).

Subclass ACARI

The mite fauna in B.C. is abundant and diverse, but incompletely studied. The watermites and oribatids are best known, with some endemic and rare species evident.

A tabular check-list of the 43 described oribatid species in B.C. is provided by Behan-Pelletier (1993a). A complete catalogue of the North American species of the suborder has been published (Marshall et al. 1987), keys to families are given by Norton (1990), and generic keys have been published by Balogh & Balogh (1992).

Keys to other families of terrestrial mites are to be found in Kethley (1990), Krantz & Ainscough (1990) and Philips (1990). Families of freshwater mites are considered by Smith & Cook (1991).

The ticks in Canada have been monographed by Gregson (1956). None of the species in B.C. is rare or endangered. However, 12 species of watermite and 7 terrestrial mites are considered to be rare and perhaps endangered.

Order ACARIFORMES

Suborder PROSTIGMATA

Family Tydeidae

** *Meyerella marshalli* Andre

Endemic to B.C. Recorded from soil near Kamloops (Andre 1980).

Family Hydryphantidae

* *Cowichania interstitialis* Smith

In Canada, recorded only from a spring beside South Shore Road, 2.3 km north of Cowichan L. (Smith 1983a). Elsewhere reported from Oregon.

** *Tadjikothyas* sp.n.

A new species, endemic to B.C., and known only from a spring above the ski area on Mt. Baldy, near Bridesville (Smith 1991).

* *Tartarothyas* sp.n.

A new species, in Canada recorded only from two localities on Vancouver I.: a small stream beside Hwy. 18, 2.3 km E. of Cowichan L. turnoff; small stream beside Harris Cr. Main, east of Lizard L. (Smith 1991). Also known from Oregon and California.

Family Anisitsiellidae

* *Bandakiopsis fonticola* Smith

In Canada, recorded from near Clinton (spring at Loon Cr. Fish Hatchery), and

near Cowichan L. (spring beside North Shore Road, 1.7 km N. of Cowichan L.) (Smith 1979; 1989a). Also reported from Oregon.

* *Cookacarus columbiensis* Barr

In Canada, recorded from near Clinton (spring at Loon Cr. Fish Hatchery), and from springs near Cowichan L. (Barr 1977; Smith 1991). Also reported from California and Oregon.

Family Unionicolidae

** *Koenikea* sp.n.

A new species, endemic to B.C. Known only from a pond in an old ox-bow of Okanagan R. just north of Osoyoos L. (I.M. Smith, in litt.). This is the only record of this genus north of California.

Family Aturidae

* *Lethaxona oregonensis* Cook

In Canada, recorded only from Vancouver I. (Harris Cr. near Harris Cr. Main Camp) (I.M. Smith, in litt.). Also reported from Oregon.

Family Momoniidae

* *Cyclomomonía andrewsi* Smith

In Canada, recorded only from Vancouver I. (small stream beside Hwy. 4, 16.6 km E. of Pacific Rim Road in small stream beside Harris Cr. Main and near Cowichan L.), Bella Coola Valley (small stream 6 km E. of Hagensbourg) and Walker Cr. beside Hwy. 3 near Bonanza Pass (Smith 1989b). Also reported from Nevada and Oregon.

Family Athienemanniidae

* *Chelomideopsis brunsoni* (Cook)

In Canada, recorded from near Clinton (spring at Loon Cr. Fish Hatchery) and on Vancouver I. (spring beside North Shore Road, 1.7 km N. of Cowichan L.) (Smith 1992). Reported also from Montana and Oregon.

Family Neoacaridae

* *Neocarus occidentalis* Cook

In Canada, recorded only from Vancouver I. (Lost Shoe Cr. beside Hwy. 4, 1.5 km E. of Pacific Rim Road) (I.M. Smith, in litt.). Elsewhere reported throughout the western U.S., from Arizona, California and New Mexico, north to Idaho, Montana and Washington.

Family Acalyptonotidae

* *Acalyptonotus pacificus* Smith

In Canada, recorded only from Vancouver I. (spring-fed pools in subalpine meadow on Heather Mt., near Nitinat) (Smith 1983b). Also reported from Oregon.

Suborder ORIBATIDA

Family Eremaeidae

** *Eremaeus salish* Behan-Pelletier

Endemic to B.C. Recorded only from "Stone City", Cathedral Prov. Park at 2,500 m. (V. Behan-Pelletier 1993b).

* *Eueremaeus stiktos* (Higgins)

In Canada, recorded only from undisturbed forest in southern British Columbia (Garibaldi Prov. Park, Tweedsmuir Prov. Park, Little Qualicum Falls Prov. Park and Cowichan L. Experimental Station) (Behan-Pelletier 1993b). Elsewhere reported from undisturbed forest in California, Idaho, Oregon and Utah.

** *E. michaeli* Behan-Pelletier

Endemic to B.C. So far known only from Manning Prov. Park at 2,063 m.,

Madeline L. near Penticton, and Cathedral Prov. Park at 2210 m. (Behan-Pelletier 1993b).

Family Cymbaeremaeidae

** *Scapuleremaeus kobauensis* Behan-Pelletier

Endemic to B.C. as far as known. Recorded from Mt. Kobau near Osoyoos (Behan-Pelletier 1989; Scudder 1992).

Family Mycobatidae

** *Mycobates* sp.n.1

An endemic species known only from Blackwall Mt., Manning Prov. Park. (V. Behan-Pelletier, in litt.).

* *Mycobates* sp.n.2

In Canada, known only from Headland, Brooks Peninsula on Vancouver I., but also occurs in Alaska (V. Behan-Pelletier, in litt.).

Mycobates incurvatus Hammer

In B.C., recorded only from near Takakkaw Falls in Yoho Nat. Park, but elsewhere known from Alaska, Colorado, Newfoundland, Northwest Territories, Quebec and Yukon (V. Behan-Pelletier, in litt.).

Subphylum (Class) CRUSTACEA

An annotated checklist of the freshwater Crustacea in B.C. is in preparation (Scudder, unpubl.). Distribution records suggest that none of the planktonic Crustacea is rare or endangered. This has been confirmed by R. Chengalath (in litt.).

The genera of Cladocera and other Branchiopoda are keyed by Dodson & Frey (1991), and the genera of copepoda by Williamson (1991). The B.C. Calanoida are being monographed by Sandercock & Scudder (in prep.).

Neither the Ostracods in B.C. are rare or endangered (G. Green, in litt.), nor the three subspecies of the crayfish *Pacifastacus leniusculus* (Dana) (H.H. Hobbs, Jr. in litt.). The genera of freshwater Ostracoda are keyed by Delorme (1991), and the genera of freshwater Decapoda by Hobbs (1991): Hobbs (1972) keys the species of Astacidae.

Only the orders Amphipoda and Isopoda appear to contain species that may be rare or endangered in B.C. Nine species are listed in this category below.

Order AMPHIPODA

The freshwater amphipods of glaciated North America were considered by Bousfield (1958). Since then, new species have been described by Bousfield (1979) and Holsinger & Shaw (1987). Three endemic species are at risk.

Family Anisogammaridae

** *Ramellogammarus vancouverensis* Bousfield

Endemic to B.C., and known only from pools at the mouth of a small stream, near mid beach at Wreck Bay, Vancouver I. (Bousfield 1979; Bousfield and Morino 1992).

Family Crangonyctidae

** *Stygobromus quatsinensis* Holsinger & Shaw

This rare, unpigmented amphipod is endemic to B.C., and occurs only in Thanksgiving Cave and Hourglass Cave on Vancouver I. (Holsinger & Shaw 1987).

Family Pontogeniidae

** *Paramoera carlottensis* Bousfield

Recorded from freshwater spray pools on west coast of Graham I., QCI. This is an endemic species recorded from the rocky shore south of Stiu Pt., Cartwright Sound, and spray pools at stream mouth, S. side of Gudal Bay (Bousfield 1958).

Order ISOPODA

Muchmore (1990b) has keyed the genera of North American terrestrial isopods. The freshwater species of *Asellus* were revised by Williams (1970).

Suborder ONISCOIDEA

Family Ligiidae

* *Ligidium gracile* (Dana)

In Canada, recorded only from the Queen Charlotte Islands, Massett (Van Name 1936) and Vancouver I. (Brown Bay, near Campbell R., Victoria) (F. Rafi, in litt.). Elsewhere reported from California and Alaska (Garthwaite & Lawson 1992; Van Name 1936). It is a species of sea coasts, and occurs under cover in moist situations.

Family Oniscidae

* *Littrophiloscia richardsonae* (Holmes & Gay)

In Canada, recorded from Roller Bay, Bull Harbour, Vancouver I., Skidegate, Moresby I., QCI. and Gudal Bay, QCI. (F. Rafi, in litt.). This is a littoral species found in marshes, along bays and estuaries, and on outer coasts from Baja California, Mexico to Washington (Garthwaite & Lawson 1992).

* *Alloniscus perconvexus* Dana

In Canada, recorded from Ferrer Point Beach, Vancouver I. and Chatham I. near Victoria (F. Rafi, in litt.). Elsewhere, this species burrows into the sand under detritus at approximately the high tide line, and occurs from southern California to Washington (Garthwaite & Lawson 1992).

Family Scyphaiidae

* *Detonella papillicornis* (Richardson)

In Canada, recorded from Hammond Bay (Van Name 1936) and Long Beach, Vancouver I. (F. Rafi, in litt.). Elsewhere this littoral species is reported from Sedovia, Cook Inlet, Alaska (Van Name 1936), and California (Garthwaite & Lawson 1992).

* *Armadilloniscus coronacapitalis* Menzies

In Canada, recorded from Roller Bay, Bull Harbour, Vancouver I. (F. Rafi, in litt.). Elsewhere this littoral species is recorded from California (Garthwaite & Lawson 1992).

Suborder ASELLOTA

Family Asellidae

* *Caecidotea occidentalis* (Williams)

In Canada, recorded from Prince Rupert, Nanaimo and Double Bay, Clayoquot I. (F. Rafi, in litt.). Elsewhere reported from Oregon and Washington (Williams 1970).

Subphylum MYRIAPODA

In the literature, a number of species are reported as endemic to B.C., but the Myriapoda are poorly known and poorly collected. There are probably no more endemics to be found in the Diplopoda and Scolopendromorph Chilopoda (R.M. Shelley, in litt.), but there may be some among Lithobiomorph and Geophilomorph Chilopoda. There is no North American expert on the latter two groups, and the European chilopodologists do not know the Nearctic fauna.

Illustrated keys to the families of Canadian Myriapoda have been published by Kevan & Scudder (1989).

Class DIPLOPODA

The millipedes of Canada were considered by Kevan (1983b), and the western Canadian Diplopoda have been reviewed by Shelley (1990). A partial tabular checklist of the species so far recorded from B.C. is given by Behan-Pelletier (1993a).

The North American orders and families of Diplopoda are keyed by Hoffman (1990). Of the 31 species reported from B.C., 10 are rare or endemic.

Order POLYZONIIDA

Family Hirudisomatidae

- * *Hypozonium anurum* Cook

In Canada, recorded from Burnaby, Burquitlam, Hope (2 km SE), Manning Prov. Park (west gate), Steelhead (Shelley 1990).

Order JULIDA

Family Parajulidae

- ** *Bollmaniulus spenceri* Chamberlin

Endemic to B.C. Described from Kamloops (Chamberlin 1951).

- * *Tuniulus hewitti* (Chamberlin)

In Canada, known only from the type locality at Agassiz (Chamberlin 1919). Elsewhere reported from Washington (Chamberlin & Hoffman 1958).

Order CHORDEUMATIDA

Family Rhiscosomididae

- * *Rhiscosomides* nr. *meineri* Silvestri

In Canada, known only from Point-no-Point, Vancouver I. (Shelley 1990). *R. meineri* is known from Oregon (Chamberlin & Hoffman 1958).

Family Caseyidae

- ** *Opiona columbiana* Chamberlin

Endemic to B.C., known only from Vancouver and Victoria (Chamberlin 1951).

- * *Vasingtonia irritans* Chamberlin

In Canada, known only from North Surrey (Shelley 1990). Elsewhere occurs south to west central Oregon (R.M. Shelley in litt.).

Order POLYDESMIDA

Family Xystodesmidae

- * *Tubaphe levii* Causey

Originally reported from B.C. as *Metaxycheir pacifica* Shelley and thought to be endemic, this is now recognized as *Tubaphe levii* Causey. It occurs in rain forests of the Olympic Peninsula in Washington (R.M. Shelley, in litt.). In B.C., it is confined to the coastal forests on Vancouver I., being known from Bamfield (Brady's Beach), Pacific Rim Nat. Park (Pachena Bay, Carmanah Cr. Valley), Shawnigan (82.2 km W.), Port Renfrew, China Beach Prov. Park (Shelley 1990). In addition, there is material in the Royal B.C. Museum from Upper Carmanah Cr. (Walbran Trail, 1.5 km N. of Anderson L.).

Family Polydesmidae

- ** *Scytonotus columbianus* Chamberlin

Endemic to B.C. (Chamberlin 1920). Precise locality not given.

Family Nearctodesmidae

- ** *Nearctodesmus boydi* Chamberlin

Endemic to B.C. Described from Cowichan L. (Chamberlin 1951).

**** *N. carli* Chamberlin**

Endemic to B.C. Described from the Scott Islands (Chamberlin 1951; Chamberlin & Hoffman 1958).

Class CHILOPODA

The centipedes of Canada were considered by Kevan (1983a), and additional records were included in Kevan & Scudder (1989). A partial tabular checklist of species so far recorded in B.C. is given by Behan-Pelletier (1993a).

A key to the families of centipedes of the world is provided by Mundel (1990). Of the 23 species reported from B.C., only one is rare and endemic.

Order GEOPHILIDA**Family Chinenophilidae****** *Arctogeophilus insularis* Attems**

Endemic to B.C. Recorded only from Nanaimo (Attems 1947).

Class PAUROPODA

The pauropods of Canada have been reviewed by Scheller (1984), and their distribution tabulated by Behan-Pelletier (1993a). The majority of the North American species have been keyed by Scheller (1990), but most of the 7 species that have been recorded in B.C. were excluded. All are rare and perhaps endangered.

Order TETRAMEROCERATA**Family Brachypauropidae***** *Aletopauropus lentus* MacSwain & Lanham**

In Canada, recorded from a Douglas-fir forest near Shawnigan L., and from a subalpine mountain hemlock forest on Mt. Hemlock, Garibaldi Prov. Park (Scheller 1984). Elsewhere reported from California.

Family Pauropidae*** *Allopauropus broelemanni* Remy**

In North America, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). This is a rare western Palearctic species, previously recorded from Morocco, Spain, Andorra, France, Great Britain and Finland (Scheller 1984).

**** *A. marshalli* Scheller**

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Scheller 1984).

**** *Pauropus mixtus* Scheller**

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Scheller 1984).

*** *Stylopauropus californicus* Remy**

In Canada, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). Elsewhere reported from California, West Virginia and N. E. Siberia (Scheller 1984, 1985, 1986; Behan-Pelletier 1993a).

**** *S. candanensis* Scheller**

An endemic species, known only from Kamloops (Scheller 1984).

*** *S. gladiator* Remy**

In Canada, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). Elsewhere reported from northern California (Scheller 1984).

Class SYMPHYLA

The only symphylian reported from B.C. is the cosmopolitan synanthrope *Scutigera im-maculata* (Newport) (Behan-Pelletier 1993a). This is not rare or endangered. Occasionally, it is an agricultural pest.

Subphylum HEXAPODA

Class PROTURA

Behan-Pelletier (1993a) has given a tabular checklist of the Protura in Canada. Three rare and endemic species occur in B.C. and these were described and keyed by Rusek (1974). The North American genera of Protura are keyed by Copeland & Imadaté (1990).

Family Acerentomidae

**** *Nippoentomon bifidum* Rusek**

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

**** *N. kevani* Rusek**

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

**** *Vesiculentomon marshalli* Rusek**

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

Class COLLEMBOLA

The Collembola of North America have been treated by Christiansen & Bellinger (1980-1981). A preliminary list of the B.C. fauna was published by Spencer (1948b), but there have been no recent published studies on the whole taxon.

At the present time, there are ten species apparently rare and endemic to B.C. P.F. Bellinger (in litt.) informs me that those from Vancouver I. might be truly endemic. However, this is very unlikely for species described from other parts of B.C.

Order ARTHROPLEONA

Suborder PODUROMORPHA

Family Hypogastruridae

**** *Hypogastrura arborea* Fjellberg**

Endemic to B.C. Known only from the Carmanah Valley, Vancouver I. Where it was collected in ground litter in mature forest of sitka spruce (*Picea sitchensis* (Bong.) Carr.), as well as from thick moss on branches in the canopy of tall trees (Fjellberg 1992).

Family Neanuridae

**** *Pseudachorutes columbicus* Rusek**

Endemic to B.C. Recorded from John Dean Park, Saanich (Rusek 1991).

Family Onychiuridae

**** *Multivesicula columbica* Rusek**

Endemic to B.C. Recorded from Mt. Jeffrey at 400 m (2.5 km SW Bamberton), Vancouver I. (Rusek 1982).

**** *Onychiurus eisi* Rusek**

Endemic to B.C. Described from China Beach Prov. Park, Vancouver I. (Rusek 1976).

**** *Sensiphorura marshalli* Rusek**

Endemic to B.C. Described from China Beach Prov. Park, Vancouver I. (Rusek 1976).

**** *Tullbergia obtusochaeta* (Rusek)**

Endemic to B.C. Described from Thomas S. Francis Prov. Park, Saanich Pen., Vancouver I. (Rusek 1976).

**** *T. vancouverica* (Rusek)**

Endemic to B.C. Described from China Beach Prov. Park, Vancouver I. (Rusek 1976).

Suborder ENTOMOBRYOMORPHA

Family Isotomidae

**** *Tetracanthella pacifica* Rusek & Marshall**

Endemic to B.C. Recorded from Garibaldi Prov. Park (Paul Ridge) and China Beach Prov. Park on Vancouver I. (Rusek & Marshall 1977).

*** *Agrenia agilis* Fjellberg**

In Canada, recorded only from the type locality, Black Tusk Meadows, Garibaldi Prov. Park (Fjellberg 1986). Elsewhere reported from Hurricane Ridge, Olympic Nat. Park, Washington (Fjellberg 1986).

**** *A. atroviridis* Fjellberg**

Endemic to B.C. Recorded only from the lower lobes of Helm Glacier flanking the Cinder Cone, Garibaldi Prov. Park (Fjellberg 1986).

Class DIPLURA

Spencer (1952) reported that there is at least one native species of Campodeidae, and possibly two native species of Japygidae in B.C. Most material remains undetermined. I have collected an undetermined japygid from Galiano I. (Spanish Hills, 13.iii.1983). Ferguson (1990b) gives a key to the genera and subgenera of Campodeinae in the United States.

The only named japygid that is reported from B.C. is rare and perhaps endangered.

Family Japygidae

*** *Evalljapyx sonoranus* Silverstri**

Reported from Victoria (Spencer 1952). Elsewhere recorded from at least Arizona.

Class INSECTA**Subclass ARCHAEOGNATHA****Order MICROCORYPHIA**

For the most part, systematic collections of Microcoryphia are lacking. New species may occur in B.C., but only two currently can be considered as possibly rare or endangered.

Ferguson (1990a) provides a key to the genera of Microcoryphia of the contiguous United States, but it does not include the genera listed below.

Family Machilidae

**** *Mesomachilis canadensis* Sturm**

Endemic to B.C. So far known only from the type material collected at Kamloops (Sturm 1991).

Family Meinertellidae

*** *Nearctolinus aurantiacus* (Schoett)**

In Canada, known only from Kamloops (Sturm & Bach de Roca 1992). Otherwise reported from ten localities in California, two in Nevada, and one each in Utah and Arizona.

Subclass ZYGENTOMA**Order THYSANURA**

Two cosmopolitan pest species *Lepisma saccharina* L. and *Thermobia domestica* (Packard) occur commonly in B.C. The key in Ferguson (1990a) provides for the identification of these and other species.

Subclass PTILOTA
Infraclass PALAEOPTERA

Order EPHEMEROPTERA

A checklist of the Mayflies of North America was published by Edmunds & Allen (1957) and they have been monographed by Edmunds et al. (1976) at the generic level. An earlier work by Needham et al. (1935) treats most species. A checklist of the Ephemeroptera of B.C. was published by Scudder (1976). Since then Wigle & Thomassen (1990) have added one more species to the provincial list and provided additional locality records. Only four species in B.C. have a very restricted distribution, and may be rare and endangered.

Family Baetidae

Baetes parallelus Banks

In B.C., recorded only from Oliver (Scudder 1976, 1992). Originally described from Nevada, this species occurs in the southwest United States (Edmunds et al. 1976).

Family Heptageniidae

Heptagenia elegantula (Eaton)

In B.C., recorded only from Oliver and Osoyoos (Scudder 1976, 1992). Originally described from Colorado, this species occurs in central Canada and the southwest and northwest United States (Edmunds et al. 1976).

Family Leptophlebiidae

Leptophlebia gravastella (Eaton)

In B.C., recorded only from Osoyoos (Scudder 1976, 1992). Described originally from Montana, this species occurs in both the southwest and northwest United States (Edmunds et al. 1976).

Family Siphonuridae

Ameletus sparsatus McDunnough

In B.C., recorded only from Oliver (Scudder 1976, 1992). Originally described from Alberta, this species is also reported from the northwest United States (Edmunds et al. 1976).

Order ODONATA

An annotated checklist of the Odonata of B.C. was published by Scudder et al. (1977) and a monograph of the Dragonflies of B.C. was published by Cannings & Stuart (1977). Walker (1953, 1958) and Walker & Corbet (1975) have monographed the whole fauna of Canada and Alaska.

The following 18 species may be considered rare and/or endangered in B.C.

Family Coenagruidae

Argia vivida Hagen

Known only from Field, Fairmont, Penticton, White L., Meager Cr. hot springs and from Glacier. The species ranges from southern B.C. and the Rocky Mts. of Alberta to Texas, California and Mexico. It is a very local insect found around pools near springs (especially hot springs in northern latitudes) or spring-fed streams inhabited by their larvae.

Coenagrion angulatum Walker

In B.C. known only from Dawson Cr. (Scudder et al. 1977). This is a species of the prairie ponds and open marshes in the boreal forest in the north, and occurs from northeastern B.C., northeast to the Northwest Territories, south to extreme western Ontario, Minnesota, Iowa and Alberta.

C. interrogatum (Hagen)

In B.C. known only from the Blue R. area, north of Cassiar (Scudder et al. 1977), Sheraton, Heckman Pass and near Crooked R. Prov. Park north of Prince George. This species is adapted to life in cold northern swamps and bogs and occurs from the Northwest Territories east to Newfoundland, south to Maine, Michigan, Wisconsin, and in northern B.C.

Enallagma civile (Hagen)

This species has only been recorded from Bridge L. in B.C. (Scudder et al. 1977). The species occurs from B.C. east in southern Canada to Nova Scotia, south to Florida, Texas and Arizona.

Ischnura damula Calvert

In B.C. known only from the Liard R. Hotsprings (Scudder et al. 1977). This population is disjunct from its nearest neighbours in southern Saskatchewan. The species extends east to Manitoba, and south to New Mexico and Arizona.

Family Aeshnidae

Aeshna tuberculifera Walker

A sparsely distributed species in B.C., recorded only in the Nanaimo and Campbell R. districts and Bowser on Vancouver I., Haney, Cypress Bowl, and Wells Gray Park. The species occurs in boggy-margined ponds and lakes. It occurs from Wisconsin to Nova Scotia, south to Pennsylvania and Indiana, as well as B.C. and Washington.

Family Petaluridae

* *Tanypteryx hageni* (Selys)

This is perhaps the rarest dragonfly in B.C., having been captured at only five localities in Canada, all in B.C. It is a very local species, preferring spring-fed mountain bogs. It is recorded from the Cascade Mountains near Cultus L. and Yale, from the Coast Mountains at Diamond Head in Garibaldi Prov. Park, and Black Mt. in Cypress Park, and from Alexander R. on Knight Inlet at 50°52'N (Cannings 1978). The range of the species extends from southwestern B.C. south in the mountains to California and Nevada.

Family Gomphidae

* *Octogomphus specularis* (Hagen)

In Canada known only from the mountain slopes of the lower Fraser Valley. The species occurs in warm coastal mountain streams (ie. those that drain lakes where the larvae live in the loose detritus that collects in creek pools). It occurs from B.C. south along the Pacific Coast to Baja California.

Ophiogomphus colubrinus Selys

In B.C. so far recorded only from Cluculz Cr. near Prince George (Scudder et al. 1977) and the Petitot R. It ranges from the Northwest Territories east to Newfoundland and south to Maine, and Michigan.

Family Macromiidae

* *Macromia magnifica* MacLachlan

In Canada recorded only from the Okanagan Valley (Peachland, Penticton, Osoyoos, Summerland, Vernon) and Christina L. Larvae develop among stones, tree roots, or silt in stream pools or the bays of lakes. The species ranges from southern B.C. to California and Arizona.

** *M. rickeri* Walker

Endemic to B.C. and known only from Cultus L., Hope, Salmon Arm and Shuswap L. (Scudder et al. 1977). The taxon may be only a dark form of *M. magnifica*.

Family Corduliidae

Somatochlora cingulata (Selys)

In B.C. recorded only from Arthur L., 1200 m. near Falkland and Bowron L. Prov. Park (Cannings, 1990b). This is a boreal species that occurs east to Hudson Bay, Labrador and Newfoundland, south to New Hampshire, Michigan, the north shore of L. Superior, and the northern prairies.

S. septentrionalis (Hagen)

Reported only from Atlin and Tutshi R. valley in B.C., where it occurs in small bog pools 7-15m across, with level, wet edges. The species ranges from the Northwest Territories east to Hudson Bay and Labrador, south to Newfoundland and James Bay.

S. whitehousei Walker

A sparse species in B.C., recorded from Green R. (trib. of Tusulko R.), Heckman Pass, Revelstoke Mt. (2,000 m.) and Jesmond. The species occurs in bog pools from B.C. and the Yukon east to Hudson Bay and Labrador.

Family Libellulidae

* *Erythemis collocata* (Hagen)

In Canada, restricted to southern Vancouver I. (Florence L., Goldstream, Langford, Nanaimo Distr., Newcastle I., Thetis L. group (Pike and Long L.), Victoria, Wellington Lakes), the Fraser Valley (Agassiz, Chilliwack, Vancouver) and Southern Okanagan (Osoyoos). Elsewhere recorded in the United States west of the Great Plains, and northwestern Mexico.

Pachydiplax longipennis (Burmeister)

In B.C. recorded from southern Vancouver I. north to Nanaimo, and from Ambrose L. on the Sechelt Peninsula. It occurs in the extreme southern parts of Ontario and Manitoba, and ranges south through most of the United States to Mexico, and occurs in Bermuda and the Bahamas.

* *Libellula subornata* (Hagen)

In Canada, apparently collected only from Nanaimo (Cannings 1983). The species is recorded from Chihuahua and Sonora in northern Mexico and from Arizona, Colorado, Kansas, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Texas and Utah.

Leucorrhinia patricia (Walker)

In B.C., known from Blue Lakes and Heckman Pass. The species occurs across northern Canada from the Yukon to northern Quebec.

Infraclass NEOPTERA

Order PLECOPTERA

There is no comprehensive treatment of the Plecoptera of North America, but parts have been treated by Baumann et al. (1977) Harper & Stewart (1984), Jewett (1959), Ricker (1943), Stark et al. (1986) and Stewart & Stark (1988). A catalogue of the Plecoptera of the world was published by Illies (1966). A checklist of the Plecoptera of B.C. was published by Ricker & Scudder (1976). Since then S.G. Cannings (1989) has provided new records of Capniidae.

Of the 590 species reported from North America, 125 occur in B.C. Three are endemic, and an additional 22 are rare and may be endangered.

Order PLECOPTERA**Suborder EUHOLOGNATHA****Family Capniidae****Subfamily Capniinae****** *Bolshecapnia gregsoni* (Ricker)**

Endemic to B.C. Recorded from Kokli L. (on Mt. Arrowsmith), Forbidden Plateau, Helen L. (Garibaldi Prov. Park), and Gwillim Cr. (Valhalla Mts.) (Ricker 1965; Ricker & Scudder 1976).

***B. milami* (Nebeker & Gaufin)**

In B.C., known only from the Similkameen R. (S.G. Cannings 1989). Elsewhere reported from Alberta, Idaho and Montana.

**** *B. rogozera* (Ricker)**

Endemic to B.C. Known only from Moosehorn L. at 58°10'N 132°07'W (Ricker 1965).

***B. sasquatchi* (Ricker)**

In B.C., known only from the lower Fraser R. at Hope, the Similkameen (Cambie Cr. ski area) and Skagit R. (Ricker & Scudder 1976; S.G. Cannings 1989). Elsewhere reported from Alberta and Montana.

***B. spenceri* (Ricker)**

In B.C., known only from Headquarters Cr. near Sorcerer Glacier in the Selkirk Mts. and Lyell Cr. near Golden (Ricker & Scudder 1976). Elsewhere reported from Alberta and Montana.

***Capnia cheama* Ricker**

In B.C., known only from Fraser R. near Agassiz, Bulkley R. (Smithers), Sedan Cr. (10 km W. Kitwanga) and Skeena R. (5 km W. Kitwanga) (Ricker & Scudder 1976; S.G. Cannings 1989). This rare species of large streams and rivers is also known from Alberta and Montana.

***C. nearctica* Banks**

In B.C., known only from Atlin (Ricker & Scudder 1976). Otherwise reported from Alaska, Manitoba, Northwest Territories and Ontario.

*** *C. elongata* Claassen**

In Canada, known only from the lower Fraser Valley: Agassiz (Fraser R.), Cultus L. (Frost Cr.), Chilliwack R., Hope (Wahleach Cr.), Mission (Fraser R.), Ruskin (Stave R. at Fraser R.), Vedder Crossing (Chilliwack R.) and Vedder R. canal at hwy. bridge (Ricker & Scudder 1976) and Mamquam R. (S.G. Cannings 1989). Elsewhere reported from California, Oregon and Washington.

***C. petila* Jewett**

In B.C., known from Botanie L. (Lytton), Similkameen R. (Cambie Cr. ski area), and Skeena R. (5 km W. Kitwanga) (S.G. Cannings 1989). This relatively rare species is reported also from Yukon, Alberta, Idaho, Montana, Oregon and Wyoming.

*** *C. pileata* Jewett**

In Canada, known only from southern Vancouver I. (Cowichan L., Nanaimo, Wellington) (Ricker & Scudder 1976). Elsewhere reported from California and Oregon.

***C. sextuberculata* Jewett**

In B.C., known only from Botanie L. (Lytton) (S.G. Cannings 1989). Elsewhere reported from Alberta, Montana and Oregon.

**** *Isocapnia fraseri* Ricker**

Endemic to B.C. Known only from the Fraser R. at Agassiz (Ricker 1959) and Atlin (Ricker & Scudder 1976).

I. vedderensis (Ricker)

A rare species, in B.C. recorded only from the Chilliwack R. at Vedder Crossing and the Fraser R. near Agassiz (Ricker & Scudder 1976). Otherwise reported from Alberta, Montana, New Mexico and Utah.

Family Leuctridae

Subfamily Megaleuctrinae

Megaleuctra spectabilis Neave

A rare species, in B.C. known only from Campbell Cr., a tributary of Fry Cr. tributary in the Purcell Range (Ricker & Scudder 1976).

Family Nemouridae

Subfamily Nemourinae

* *Soyedina interrupta* (Claasen)

In Canada, known only from Agassiz and Cultus L. district (Ricker & Scudder 1976). Elsewhere reported from Oregon and Washington.

Suborder SYSTELLOGNATHA

Family Chloroperlidae

Subfamily Chloroperlinae

Alloperla medveda Ricker

In B.C., known only from Kamloops (Ricker & Scudder 1976). Elsewhere reported from Alberta, Idaho, Montana, Wyoming and Yukon.

* *Haploperla chilnualna* (Ricker)

In Canada, this rare species is known only from Chemainus R., Langford and French Cr. (Qualicum Beach) (Ricker & Scudder 1976). Elsewhere reported from California, Oregon and Washington.

Family Peltoperlidae

Subfamily Peltoperlinae

* *Yoroperla mariana* (Ricker)

In Canada, known only from Little Liumchin Cr. at Cultus L. (Ricker & Scudder 1976). Elsewhere reported from California, Oregon and Washington.

Family Perlodidae

Subfamily Isoperlinae

* *Cascadoperla trictura* (Hoppe)

In Canada, known only from the Chilliwack R. and Sweltzer Cr. (Cultus L.) (Ricker & Scudder 1976). Elsewhere reported from California, Idaho, Montana, Oregon and Washington.

Isoperla transmarina (Newman)

In B.C., known only from Takla L. (Ricker & Scudder 1976). Elsewhere the species is widely distributed.

Subfamily Perlodinae

Tribe Arcynopterygini

Arcynopteryx compacta (McLachlan)

In B.C., known only from Atlin (Ricker & Scudder 1976). Widely distributed and abundant in the north.

Setvena tibialis (Banks)

In B.C., known only from Kelsey Bay (Ricker & Scudder 1976). Elsewhere reported from Oregon and Washington.

Tribe Diploperlini

* *Cultus tostonus* (Ricker)

In Canada, known only from Oliver (Ricker & Scudder 1976; Scudder 1992).

Elsewhere reported from California, Idaho, Montana, Oregon, Washington, and Wyoming.

* *Osobenus yakimae* (Hoppe)

In Canada, known only from Little Fort, on the North Thompson R. (Ricker & Scudder 1976). Elsewhere reported from California, Oregon and Washington.

Tribe Perlodini

Isogenoides elongatus (Hagen)

In B.C., known only from Oliver and Rock Cr. (Ricker & Scudder 1976). Known from Alberta and throughout the western United States.

ORTHOPTEROIDS

The distribution of the Canadian Orthopteroid insects has been summarized by Vickery & Scudder (1987). A handbook on the fauna was published by Vickery & Kevan (1985).

Of the 226 native species now recognized as established in Canada, 40 occur only in British Columbia.

The following 16 species or subspecies warrant further consideration for rare and/or endangered status.

Order DICTYOPTERA

Suborder MANTODEA

Family Mantidae

* *Litaneutria minor* (Scudder)

This species is confined to Oliver and Osoyoos in the South Okanagan, and has been collected only five times in the last ten years (R.A. Cannings 1987; Scudder 1992). The species occurs from B.C. to North Dakota, and south to Mexico.

Family Grylloblattidae

** *Grylloblatta campodeiformis athapaska* Kamp

Known only from the type locality Stone Mt. Prov. Park (Summit L., Mt. St. Paul, 1502m.) (Kamp 1979).

** *G. campodeiformis nahanni* Kamp

Known only from the type locality Cassiar, Cassiar Mt. Range, Mt. McDame, 1647m. Limestone Peak, 1830m (Kamp 1979).

** *G. scudderi* Kamp

Known from the type locality and type material, Garibaldi Prov. Park, Whistler Mt., 1951m (Kamp 1979).

Order GRYLLOPTERA

Family Rhaphidophoridae

* *Ceuthophilus vicinus* Hubbell

In Canada, known only from Oliver and Osoyoos in the South Okanagan (Scudder 1992). Elsewhere reported from Idaho and Washington.

Family Tettigoniidae

* *Anabrus cerciata* Caudell

In Canada, known only from Vernon. The species occurs from B.C. to Oregon.

* *Neduba steindachneri* (Hermann)

In Canada, confined to oak-Arbutus habitats on the south and east coasts of Vancouver Island, and in the Fraser Valley only as far inland as Boston Bar (Vickery & Kevan 1985). Elsewhere reported from Washington.

Family Oecanthidae

* *Oecanthus californicus* Saussure

In Canada, known only from Okanagan L. The range of the species extends from B.C. to Wyoming, south to California and Mississippi.

O. nigricornis F. Walker

In B.C., known only from Okanagan L. and Oliver. The range of the species is from B.C. to Maine, south to West Virginia.

Order ORTHOPTERA

Family Acrididae

Subfamily Melanoplinae

Phoetaliotes nebrascensis (Thomas)

In B.C., known only from Okanagan Falls and Oliver. The species range extends from B.C. to Massachusetts, south to Arizona and Texas.

Subfamily Locustinae

* *Dissosteira spurcata* Saussure

In Canada, recorded only from Oliver. The species occurs south to California and Utah (Otte 1984).

** *Trimerotropis longicornis* E.M. Walker

Endemic to B.C. Described from and recorded only from Vernon (Walker 1902, 1906; Vickery & Kevan 1985).

Subfamily Gomphocerinae

* *Orphulella pelidna desereta* Scudder

In Canada, this subspecies is known only from the South Okanagan (Conkle Mt., Fairview, Oliver, Osoyoos and Summerland (Powell Beach)). It occurs south to northern California and New Mexico.

Aulocara elliotti (Thomas)

In B.C., this species is confined to the Okanagan (Fairview, Oliver, Penticton, Vernon, Westbank). The range extends to Manitoba, south to Texas and Mexico (Otte 1981).

* *Psoloessa delicatula buckelli* Rehn

In Canada, this subspecies is confined to the Okanagan (Fairview, Kelowna, Keremeos, Midway, Naramata, Okanagan Falls, Oliver, Osoyoos, Penticton, Rock Cr. and Summerland) (Rehn 1937; 1942; Vickery & Kevan 1985). The subspecies also occurs in Washington state.

Order PSOCOPTERA

The Psocoptera of North America have recently been monographed by Mockford (1993). Twenty-two species are recorded from B.C., none being endemic, rare or endangered (E.L. Mockford, in litt.).

Order HETEROPTERA

A catalogue of the Heteroptera of Canada and the continental United States has been published by Henry & Froeschner (1988). It lists 564 species recorded from British Columbia, with 196 species found nowhere else in Canada. However, I have many species to add to the lists. Slater & Baranowski (1978) key most genera of Heteroptera and provide additional references.

A survey of the published records, and collections across Canada, suggests that the following 74 species need detailed consideration for rare and/or endangered status in B.C.

Family Alydidae

* *Tollius setosus* Van Duzee

In Canada, recorded only from southeastern Vancouver I., being collected from

Goldstream, Ladysmith, Saanich and Victoria only. Reported elsewhere only from Arizona, California, Montana, New York(?) and Utah (Henry & Froeschner 1988).

Family Anthocoridae

**** *Lyctocoris okanaganus* Kelton & Anderson**

This species is endemic to British Columbia (Kelton 1978). Described originally from Summerland (Kelton & Anderson 1962), the only other locality for which specimens are available is Christina L., under bark on *Pinus ponderosa*, 12.vii.1970 (L.A. Kelton) [Canadian National Collection (CNC)].

**** *L. rostratus* Kelton & Anderson**

This species is endemic to British Columbia (Kelton 1978). Described originally from Trinity Valley and Salmon Arm (Kelton & Anderson 1962) and collected on *Pinus monticola* Douglas. Additional material in the CNC is from Christina L., under bark, *Pinus ponderosa*, 12.vii.1970 (L.A. Kelton); Lytton, under bark, on *P. ponderosa*, 20.viii.1970 (L.A. Kelton); Nicola L. on *P. ponderosa*, 26.vii.1970 (L.A. Kelton); Penticton, under bark, *P. ponderosa*, 10.viii.1970 (L.A. Kelton)

Family Aradidae

*** *Mezira pacifica* Usinger**

In Canada, recorded only from southeastern Vancouver I., being reported from Duncan and Goldstream (Parshley 1921; Downes 1927). Reported elsewhere from Arizona, California, Idaho, Oregon, Washington and Wyoming (Henry & Froeschner 1988).

Family Berytidae

*** *Acanthophysa echinata* Uhler**

In Canada recorded only from Wasa (Scudder 1991) and Osoyoos (Haynes Ecol. Res.). Reported elsewhere from Arizona, California, Idaho, New Mexico, Oregon, Utah and Washington (Henry & Froeschner 1988).

Family Cimicidae

*** *Hesperocimex coloradensis* List**

In Canada, recorded only from Summerland, B.C. in nest of flicker (Scudder 1961). Reported elsewhere from California, Colorado, Nebraska, Oregon and Mexico (Henry & Froeschner 1988).

Family Coreidae

**** *Coriomeris insularis* Dolling & Yonke**

This species is endemic to the Nanaimo Lowlands and Strait of Georgia eco-sections in B.C., being recorded from Bowser, Comox, Goldstream, Nanaimo, Saanich, Victoria, Denman I. and Galiano I. (Dolling & Yonke 1976).

Family Corixidae

*** *Cenocorixa andersoni* Hungerford**

In Canada, known only from Vancouver I. (Spectacle L.) and the Lower Fraser Valley (Abbotsford, Delta, Vancouver, White Rock) (Jansson 1972; Scudder 1987). Recorded elsewhere from Oregon and Washington.

*** *C. blaisdelli* (Hungerford)**

In Canada, known only from Vancouver and Delta (Jansson 1972; Scudder 1987). Recorded elsewhere from California and Washington.

*** *Trichocorixa verticalis californica* Sailer**

In Canada, recorded only from Albert Head Lagoon, Parksville (French Cr.) and Thetis I. (Scudder 1977). Elsewhere reported from California.

Family Cydnidae

* *Dallasiellus discrepans* (Uhler)

In Canada, confined to the Okanagan, with specimens examined from Naramata, Oliver, Osoyoos, Summerland, Vaseux L. and Vernon. In United States reported from Arizona, California, Colorado, Idaho, New Mexico, Oklahoma, Oregon, Texas, Utah & Washington (Henry & Froeschner 1988).

Family Hydrometridae

Hydrometra martini Kirkaldy

In B.C., recorded only from Lytton (Scudder 1977). Elsewhere reported across Canada and the United States.

Family Lygaeidae

Subfamily Heterogastrinae

* *Heterogaster behrensii* (Uhler)

In Canada, so far recorded only from 4 km N of Oliver on *Urtica dioica* L. (Cannings 1981; Scudder 1985, 1992). Elsewhere reported from California, Idaho, Oregon, Utah and Mexico (Henry & Froeschner 1988).

Subfamily Lygaeinae

** *Lygaeospilus brevipilus* Scudder

An endemic species to B.C., described and so far known for sure only from the type locality in Manning Prov. Park (Scudder 1981). Other specimens from Nicola (B.C.) and Oregon may be this species (Scudder 1981).

Melanopleurus perplexus Scudder

An endemic species to Canada, described from Alberta, Manitoba and Saskatchewan (Scudder 1981), and in B.C. known only from 32 km W of Charlie L., Hwy. 29, Peace R. (Scudder 1986).

Subfamily Orsillinae

* *Nysius paludicolus* Barber

In Canada, so far recorded only at Tsawwassen Beach (Scudder 1986). Elsewhere known only from salt marshes in Washington, feeding on *Salicornia*.

Subfamily Rhyparochrominae

Tribe Antilocorini

* *Botocudo modestus* (Barber)

In Canada, so far known only from two specimens collected at Osoyoos. Elsewhere reported from California, Idaho, Missouri, Oregon, Texas and Utah (Henry & Froeschner 1988).

Tribe Drymini

* *Eremocoris canadensis* Walley

A species described from Keremeos (Walley 1929) and so far reported only from B.C. and Idaho (Henry & Froeschner 1988).

* *E. melanotus* Walley

A species described from Lillooet (Walley 1929) and so far reported only from B.C. and Idaho (Henry & Froeschner 1988).

** *Gastrodes intermedius* Usinger

A species endemic to B.C., and known only from type material from Penticton (Dog L.) (Usinger 1938).

* *Scolopostethus tropicus* (Distant)

In Canada, known only from Goldstream (Scudder 1985). Otherwise recorded from California, Idaho, Oregon and Guatemala (Henry & Froeschner 1988).

Tribe Gonianotini

* *Delochilocoris gracilis* Scudder MS name

In B.C., recorded only from Tatlayoko L. and Tatla L. Elsewhere known from a single locality in Idaho and one locality in Oregon.

* *Malezonotus arcuatus* Ashlock

A rare lygaeid, in Canada known only from Kaslo Cr. (Ashlock 1958). Otherwise known only from Washington (Mt. Rainier and Paradise Valley) (Ashlock 1958).

* *M. grossus* Van Duzee

In Canada known only from Summerland (Scudder 1985, 1992). Otherwise known from California and Oregon (Henry & Froeschner 1988).

* *Sisamnes claviger* (Uhler)

In Canada, known only from the South Okanagan (Keremeos Cr., Oliver, Osoyoos, Vaseux L.) (Scudder 1985, 1992, 1993). Occurs rather widely in the United States (Henry & Froeschner 1988).

Tribe Ozophorini

* *Ozophora occidentalis* Slater

In Canada confined to the South Okanagan and known only from Penticton and McKinney Rd., 1.6 km E. Oliver (Slater 1988; Scudder 1992). Otherwise recorded from California, and Oregon (Slater 1988).

Tribe Rhyparochromini

* *Cordillonotus stellatus* Scudder

In Canada known only from Summerland and Victoria (Scudder 1984). Also reported from California, Oregon and Washington (Scudder 1984).

Tribe Udeocorini

* *Neosuris castanea* (Barber)

In Canada, known only from Osoyoos, where six specimens have been collected over the past six years (Scudder 1992, 1993). The species is otherwise reported from Arizona, Colorado and Idaho.

Family Miridae

Subfamily Bryocorinae

Tribe Dicyphini

* *Tupiocoris californicus* (Stål)

In Canada, so far collected only at Tsawwassen Beach, 23.vii.1961, 7.vii.1962 (G.G.E. Scudder). So far recorded only from California, Colorado and Mexico (Henry & Froeschner 1988).

Subfamily Deraeocorinae

Tribe Clivinematini

** *Clivinema fusca* Downes

A species endemic to B.C., and known only from unique female holotype from Saanich Distr., Mt. Douglas (Downes 1924).

Tribe Deraeocorini

* *Deraeocoris bakeri* Knight

In Canada, recorded only from Chopaka, Osoyoos and Penticton on *Artemisia tridentata* Nutt., *Chrysothamnus nauseosus* (Pall.) Britt. and *Purshia tridentata* (Pursh) DC. Elsewhere reported from Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah and Washington (Razafimahatratra 1980).

** *D. fraserensis* Razafimahatratra & Lattin

An endemic species from B.C. described from Wells (Wendell Park) and Quesnel (Razafimahatratra & Lattin 1982).

* *D. fulgidus* (Van Duzee)

In Canada, recorded only from Kaleden, Oliver and Osoyoos on *Purshia tridentata* (Scudder 1992). Elsewhere reported from California, Colorado, Nevada, Oregon, Utah, Washington and Wyoming (Razafimahatratra 1980; Henry & Froeschner 1988).

* *D. incertus* Knight

In Canada, known only from the Gulf Islands Biotic area, with records from Galiano I. (Spanish Hills), Malahat, Saanich and Victoria (on Douglas Fir) (Razafimahatratra 1980). Elsewhere known from Arizona, California, Colorado and Oregon.

Subfamily Mirinae

Tribe Herdoniini

* *Paradacerla formicina* (Parshley)

In Canada, confined to the Nanaimo Lowlands and Strait of Georgia ecosections, with records from Cowichan, Goldstream, Gordon Head, Saanich, Shawnigan and Victoria. Elsewhere reported from California, Idaho and Oregon (Henry & Froeschner 1988).

Tribe Mirini

** *Dichrooscytus flagellatus* Kelton

A species endemic to B.C., described from Hope, Princeton, Radium Hot Springs, and Spences Bridge (Kelton 1972). Now known also from Hedley, Merritt, Okanagan Falls, and Summerland, usually on *Juniperus*.

** *D. rufusculus* Kelton

A species endemic to B.C. and known only from Manning Prov. Park (Gibson Pass), Hedley, Kaslo and Lockhart Beach (Kelton 1972).

* *Irbisia knighti* Schwartz & Lattin

In Canada confined to southeastern Vancouver I., being reported from Jesse I. (Nanaimo), Royal Oak and Victoria (Schwartz & Lattin 1984; Schwartz 1984). Elsewhere known from California, Oregon and Washington (Henry & Froeschner 1988).

* *I. pacifica* (Uhler)

In Canada confined to the Okanagan and Boundary regions, being recorded from Christina L. (8 km E.), Grand Forks, Hedley (and 27 km W.), Okanagan Falls, Oliver (and Meyer Flat), Osoyoos, Penticton, Summerland, Vaseux L. and Vernon (Schwartz 1984). Elsewhere recorded from California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming and Mexico (Henry & Froeschner 1988).

* *I. shulli* Knight

In Canada confined to the Okanagan, being recorded from Anarchist Mt., Kelowna, Oliver, Osoyoos, Rock Cr., Penticton, Summerland, Vaseux L. and White L. (Schwartz 1984). Elsewhere recorded from Colorado, Idaho, Montana, Oregon, Utah, Washington and Wyoming (Henry & Froeschner 1988).

** *Phytocoris dentatus* Knight

Endemic to B.C. and known only from the unique male holotype: locality not determined (Knight 1974; Stonedahl 1988).

* *P. occidentalis* Stonedahl

In Canada, known only from southeastern Vancouver I. (Goldstream, Malahat) (Stonedahl 1984, 1988). Elsewhere recorded only from California and Oregon on

Pinus attenuata Lemmon, *P. contorta* Douglas, *P. ponderosa* Douglas, *P. radiata* D. Don., and *P. sabiniana* Douglas (Stonedahl 1988).

Tribe Stenodemini

Trigonotylus antennatus Kelton

In B.C., known only from Osoyoos (Kelton 1970, 1971; Scudder 1992). Elsewhere recorded from California, Colorado, Manitoba, Oregon, Saskatchewan and Utah (Henry & Froeschner 1988).

T. brooksi Kelton

In B.C., known only from Osoyoos (Kelton 1970, 1971). Elsewhere recorded only from Saskatchewan (Henry & Froeschner 1988).

* *T. longipes* Slater & Wagner

In Canada, known only from Oliver and Osoyoos (Kelton 1971; Scudder 1992). Elsewhere recorded from California, Colorado, Kansas, New Mexico, Nebraska, Nevada, Oregon, Texas, Utah, Washington and Mexico (Henry & Froeschner 1988).

Subfamily Orthotylinae

Tribe Ceratocapsini

* *Ceratocapsus cunealis* Henry

In Canada, known only from the South Okanagan (Oliver, Osoyoos, Summerland, Vaseux L.) (Henry 1985) and Cawston usually on *Artemisia tridentata*. Elsewhere recorded from Idaho and collected on greasewood and clematis (Henry 1985).

** *C. downesi* Knight

Endemic to B.C. and known only from Royal Oak, Saanich Distr. and Victoria (Knight 1927; Henry & Froeschner 1988).

Tribe Orthotylini

Hadronema uhleri Van Duzee

In B.C., collected only from Oliver and Summerland on *Ceanothus* and *Purshia tridentata*. Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Nevada, Utah and Washington (Henry & Froeschner 1988). Also known from Oregon.

Lopidea picta Knight

In B.C., collected only from Oliver and Twin Lakes on *Artemisia tridentata*. Also reported from Alberta, Arizona, California, Colorado, Idaho, New Mexico, Nevada, Oklahoma, Oregon, Utah, Wyoming and Washington (Asquith 1991).

* *Parthenicus cercocarpi* Knight

In Canada, recorded only from Cawston, Okanagan Falls, Oliver, Osoyoos and Vaseux L., usually on *Purshia tridentata*. Elsewhere reported from Arizona (Henry & Froeschner 1988).

* *Slaterocoris pilosus* Kelton

In Canada, known only from Oliver and Osoyoos (Kelton 1968). Otherwise known from California, Idaho and Washington (Henry & Froeschner 1988), and usually collected on *Artemisia tridentata*.

* *S. robustus* (Uhler)

In Canada, so far only collected at Cawston (6.4 km E.) and Osoyoos. Otherwise reported from California, Colorado, Idaho, Kansas, Montana, New Mexico, Nevada, Texas, Utah and Wyoming (Henry & Froeschner 1988).

Subfamily Phylinae

Tribe Hallodapini

* *Orectoderus arcuatus* Knight

In Canada, restricted to the South Okanagan, with specimens from Cawston, Kilpoola L., Oliver, Osoyoos, and Penticton. Otherwise known only from Washington (Henry & Froeschner 1988).

* *Teleorhinus brindleyi* Knight

In Canada, restricted to the South Okanagan, with specimens from Oliver and Summerland. Otherwise known from Idaho and Wyoming (Henry & Froeschner 1988).

Tribe Phylini

* *Chlamydatus brevicornis* Knight

In Canada, so far reported only from Osoyoos (Kelton 1965). Otherwise known from Colorado, Idaho, Utah and Wyoming (Henry & Froeschner 1988). The host plant is *Artemisia tridentata*.

* *C. schuhi* Knight

In Canada, so far reported only from Oliver on *Leptodactylon pungens* (Torr.) Nutt. (Kelton 1965). Otherwise known only from Oregon (Henry & Froeschner 1988).

* *Plagiognathus ribesi* Kelton

In Canada, recorded from Rock Cr. and Summerland on *Ribes* (Kelton 1982) and Oliver, Osoyoos and Vaseux L. on *Purshia tridentata*. Otherwise known only from Colorado on *Ribes cereum* Dougl. (Kelton 1982).

* *Pronotocrepis clavicornis* Knight

In Canada, recorded only from Christina L. (on *Pinus contorta*), Hedley (on *Ribes cereum*), Osoyoos (Anarchist Mt.) and Rock Cr. (on *Ribes*) (Scudder 1961). Otherwise known only from Colorado.

Tribe Pilophorini

* *Pilophorus stonedahli* Schuh & Schwartz

In Canada, known only from Oliver and Vaseux L. on *Pinus ponderosa* (Schuh & Schwartz 1988). Otherwise known from California and Washington (Schuh & Schwartz 1988).

Family Nabidae

* *Hoplistoscelis heidemanni* (Reuter)

In Canada, known only from Anarchist Mt. and Osoyoos (Haynes Ecol. Res.) (Scudder 1992). Elsewhere reported from California and Idaho (Henry & Froeschner 1988).

Nabicula propinqua (Reuter)

In B.C., known only from 1 female taken at Tsawwassen Beach, 21.vii.1962 (G.G.E. Scudder). Reported from Alberta, Oregon and many other states (Henry & Froeschner 1988).

* *Omanonabis lovetti* (Harris)

In Canada known only from Galiano I. (Spanish Hills in marshy habitat) and Saanich (Scudder 1985). Otherwise known only from marsh or salt marsh habitats in California, Oregon and Washington (Asquith & Lattin 1991).

Family Notonectidae

* *Notonecta spinosa* Hungerford

In Canada, known only from the Okanagan (Kaleden, Kelowna, Oliver, Vaseux L., Vernon, Westbank) (Scudder 1977). Otherwise reported from Montana, Nevada, Oregon, Utah & Wyoming (Henry & Froeschner 1988).

* *N. unifasciata andersoni* Hungerford

In Canada, known only from the Okanagan (Green L., Kelowna, Mahoney L., Okanagan Falls, Oliver, Osoyoos, Peachland, Penticton, Summerland, Vernon, Westbank, White L.) (Scudder 1977). Otherwise recorded from Arizona, Nevada, Oregon and Utah (Henry & Froeschner 1988).

Family Pentatomidae

* *Dendrocoris pini* Montandon

In Canada, known only from the South Okanagan (Okanagan Falls, Okanagan Landing, Oliver, Vaseux L.) on *Pinus ponderosa* (Scudder 1985, 1992). Otherwise recorded from Arizona, California, Colorado, New Mexico, Oregon, Texas & Utah (Henry & Froeschner 1988).

Family Rhopalidae

* *Harmostes dorsalis* Burmeister

A rare species, in Canada known only from Goldstream, Langford, Royal Oak and Victoria. Otherwise recorded from Arizona, California, Oregon, Texas, Mexico to Argentina and Peru (Henry & Froeschner 1988).

* *Arhyssus barberi* Harris

In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from California, Idaho, Oregon, Utah, & Washington (Henry & Froeschner 1988).

* *A. distinctus* Chopra

In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from California and Oregon (Henry & Froeschner 1988).

* *A. validus* (Uhler)

In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from Arizona, California, Colorado, Idaho, Oregon, Utah, Washington & Mexico (Henry & Froeschner 1988).

Family Saldidae

* *Ioscytus politus* (Uhler)

In Canada, known only from Osoyoos (Richter Pass) (Scudder 1985). Elsewhere recorded from Arizona, California, Colorado, New Mexico, Nevada, Oregon and Utah (Henry & Froeschner 1988).

Family Scutelleridae

* *Camirus porosus* (Germar)

In Canada, recorded only from Galiano I., Goldstream, Vancouver and Victoria, the latter two prior to 1904. Elsewhere reported from California, Colorado, Florida, North Carolina, Texas, Virginia and Mexico to Colombia (Henry & Froeschner 1988).

* *Homaemus parvulus* (Germar)

In Canada, recorded only from Osoyoos (Scudder 1992). Elsewhere reported across the United States from east to west.

Family Tingidae

* *Acalypta saundersi* (Downes)

In Canada, known only from Goldstream (Downes 1935). Elsewhere recorded from California, Oregon and Washington (Henry & Froeschner 1988).

* *Gargaphia opacula* Uhler

In Canada, known only from the South Okanagan (Oliver, Skaha L., Vaseux L.) (Scudder 1961). Elsewhere recorded from California, Kansas, New Mexico, Utah, Washington & Mexico (Henry & Froeschner 1988).

Order HOMOPTERA

Too little information is available on the Suborder Sternorrhyncha to assess the status of species. For the Suborder Auchenorrhyncha, some records are available from Metcalf's General Catalogue of the Homoptera (1935-1962).

The Cicadellidae (leafhoppers) of Canada were reviewed by Beirne (1956), but this publication needs to be updated. The Cicadidae and Membracidae of Canada were also reviewed by Beirne (1961), but this work is in need of revision. Only the Cercopidae of Canada have received recent monographic treatment (Hamilton 1982).

The following 48 Auchenorrhyncha are worthy of consideration for rare or endangered status.

Suborder AUCHENORRYNCHA

Family Cercopidae

* *Aphrophora ampliata* Hamilton

This is a rare species recorded only from Victoria and the Washington coast (Hamilton 1982).

** *A. regina* Hamilton

Endemic to the Queen Charlotte Islands (Hamilton 1982).

Family Cicadellidae

Subfamily Agallinae

* *Acertogallia arida* Oman

In Canada, recorded only from Radium Hot Springs. The range of the species extends south to Montana and Colorado.

* *A. compressa* Hamilton

In Canada, recorded only from Hedley. The range of the species extends south to Arizona (K.G.A. Hamilton, pers. comm.).

* *A. longula* (Van Duzee)

In Canada, recorded only from Vancouver I. Elsewhere reported from California, Oregon and Utah.

** *A. okanagana* Hamilton

An endemic species recorded only from the unique male holotype collected at Osoyoos (K.G.A. Hamilton, pers. comm.).

* *A. zacki* Hamilton

In Canada, recorded only from Osoyoos. The species also occurs in Washington (K.G.A. Hamilton, pers. comm.).

Subfamily Macropsinae

** *Oncopsis cinctifrons kootenensis* Hamilton

A subspecies endemic to B.C. (Hamilton 1983). Recorded from Ainsworth, Brouse, Christina L., Creston, Kaslo, Kootenay Bay, Lafferty, Lockhart Beach, Longbeach, Mt. Revelstoke, Shoreacres and Taghum on *Betula papyrifera*.

O. incidens Hamilton

In B.C., recorded only from Osoyoos and Summerland. Elsewhere the species is reported from Washington, with questionable records from Manitoba and Saskatchewan. It occurs on *Betula occidentalis* Hook.

** *O. prairiana ferrosa* Hamilton

A subspecies endemic to B.C. (Hamilton 1983). Recorded from Brouse, Christina L., Creston and Sidar on *Betula papyrifera*.

Subfamily Idiocerinae

** *Idiocerus glacialis* Hamilton

Endemic to B.C. (Hamilton 1985) and recorded only from Taft and Glacier (at 1067m). It occurs on *Alnus* and *Salix*.

**** *I. indistinctus* Hamilton**

Endemic to B.C., described from and known only from 10 km N. of Quilchena (Hamilton 1985).

***I. omani* Freytag**

In B.C., recorded only from Goldstream and Saanich. Elsewhere reported from Alberta, Montana, Oregon and Washington.

*** *I. tahotus* Ball & Baker**

In Canada, recorded only from the Okanagan (Hedley, Midway, Naramata, Olalla, Osoyoos, Penticton, Yellow L.) on *Ribes cereum*. Elsewhere reported from California, Oregon and Washington.

**** *I. vanduzei* Hamilton**

Endemic to B.C. Recorded from Chilliwack, Cowichan, Duncan, Garibaldi Prov. Park and Victoria on *Populus* (Hamilton 1980).

Subfamily Cicadellinae

Tribe Balthysomatophorini

*** *Errhomus calvus* Oman**

In Canada recorded only from the Okanagan (Bridesville, Keremeos, Oliver, Osoyoos, Summerland). Elsewhere reported only from Washington. The female is flightless.

*** *Hyliaus oregonensis* (Baker)**

In Canada, recorded only from the Brooks Peninsula and Port Alice. Elsewhere reported only from Oregon.

*** *Thatuna gilletti* Oman**

In Canada, recorded only from Erie, Fife, Cascade (22.5 km E.) and Rossland. Elsewhere reported from Idaho, Montana and Texas.

Subfamily Deltocephalinae

Tribe Scaphytopini

*** *Scaphytopius diabolus* (Van Duzee)**

In Canada, recorded only from the South Okanagan (Okanagan Falls, Oliver and Osoyoos) on *Purshia tridentata*. Elsewhere reported from Arizona, California, Colorado, Oregon, Washington and Utah.

Tribe Deltocephalini

*** *Chlorotettix similis* De Long**

In Canada, recorded only from Goldstream, Langford and Victoria. Elsewhere reported from Idaho.

*** *Ballana callipera* De Long**

In Canada, recorded only from Osoyoos. Elsewhere reported from California, Idaho, Montana, Nevada, Utah and Washington.

*** *B. hebea* De Long**

In Canada, recorded only from Hedley. Elsewhere reported from Colorado, Nevada, Utah and Washington.

*** *B. ortha* De Long**

In Canada recorded only from Osoyoos. Elsewhere reported from California, Colorado, Idaho, Nevada, New Mexico, North Dakota and Utah.

*** *B. remissa* De Long**

In Canada, recorded only from Oliver and Osoyoos. Elsewhere reported from Oregon and Washington.

*** *B. titusi* (Ball)**

In Canada, recorded only from Goldstream. Elsewhere reported from California, Idaho, Wyoming and possibly Arizona.

- * *Calanana rubralineata* (Beamer)
In Canada recorded only from Victoria on sedges. Elsewhere reported only from California.
- ** *Elymana pacifica* Hamilton
Endemic to B.C. Recorded from Fanny Bay, Oyster R., Saanich Distr. and Tsawwassen (Chiykowski & Hamilton 1985), as well as Denny I., the Don Peninsula, Robson Bight and Swindle I.
Limotettix divaricatus (Saunders & De Long)
In B.C., recorded only from Yahk on *Carex*. Elsewhere occurs in eastern North America, Saskatchewan and Idaho.
- ** *L. obesura* Hamilton
Endemic to B.C. Recorded only from Ladysmith (type locality) and Victoria (Hamilton 1994).
- ** *L. xanthus* Hamilton
Endemic to B.C. Recorded only from the type locality, 16 km S. of Revelstoke (Hamilton 1994).
- * *Athysanella* sp.n.1.
In Canada, recorded only from Douglas L., Oliver, Osoyoos and Penticton. Elsewhere known to occur in Idaho (K.G.A. Hamilton, pers. comm.).
- ** *Athysanella* sp.n.2.
An undescribed species endemic to B.C. and so far only collected south of Hedley (K.G.A. Hamilton, pers. comm.).
- ** *Psammotettix beirnei* Greene
Endemic to B.C. Recorded only from Mt. Revelstoke (1900-2135m) and Mt. Harry (Greene 1971).
- * *Latalus mundus* Beamer & Tuthill
In Canada, recorded only from Merritt and Osoyoos. Elsewhere reported from California, Montana and Wyoming.
- ** *Rosenus decurvus* Hamilton & Ross
Endemic to B.C. Recorded only from Taylor (Hamilton & Ross 1975).
Hebecephalus crassus (De Long)
In B.C., recorded only from Mt. Baldy and Summerland. Elsewhere reported from Idaho, Wyoming and the Yukon.
- ** *Hebecephalus* sp.n.
Endemic to B.C. Known only from Douglas L. (K.G.A. Hamilton, pers. comm.)
- * *Deltocephalus* sp.n.
An undescribed species, in Canada known only from the Brooks Peninsula, but material is also available from Idaho, Utah and Wyoming (K.G.A. Hamilton, pers. comm.).
- ** *Unoka* sp.n. near *gillettei* Metcalf
Endemic to B.C. Known only from Oliver and Osoyoos (K.G.A. Hamilton, pers. comm.).

Family Cicadidae

- * *Okanagana ornata* Van Duzee
In Canada, recorded only from Anderson L. and Seton L. Elsewhere reported from California and Oregon.

Family Cixiidae

** *Oecliidius* sp.n.

An endemic species, known only from Seton L. and Spences Bridge (K.G.A. Hamilton, pers. comm.).

* *Oilarus coconinus* Ball

In Canada, recorded only from Seton L. Elsewhere reported from Arizona, Colorado, Nevada, Texas and Utah (Mead & Kramer 1982).

* *O. zyxus* Caldwell

In Canada, recorded only from Kelowna, Vernon and Okanagan Mission. Elsewhere reported from Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah and Mexico (Mead & Kramer 1982).

Family Delphacidae

** *Laccocera lineata* Scudder

Endemic to B.C. Recorded from the Cariboo, Chilcotin, Cummings L., Riske Cr. and Soda Cr. (Scudder 1963).

* *Prokelisia salina* (Ball)

In Canada, recorded only from Osoyoos (Heady & Wilson 1990). Elsewhere reported from Arizona, California, Colorado, Florida, Georgia, Idaho, Kansas, Nevada, New Mexico, Oregon, Texas, Utah, Washington and Wyoming (Wilson 1982).

Family Membracidae

* *Ceresa franciscanus* (Stål)

In Canada, recorded only from Goldstream. Elsewhere reported from California, Washington and possibly Colorado.

* *Platycotis maritimus* Van Duzee

In Canada, recorded only from Bella Coola, Englishman R. Falls Park, Goldstream, Langford, Parksville, Steelhead, Vancouver, Victoria and Wellington. Elsewhere reported from California.

* *P. quadrivittata* (Say)

In Canada, recorded only from Garry oak at Galiano I., Genoa Bay, Goldstream, Jesse I. (Nanaimo), Langford, Saanich, Victoria and Wellington. Elsewhere reported from California.

Order THYSANOPTERA

A catalogue of the world Thysanoptera is being published in parts (Jacot-Guillarmod 1970-1986). There is currently no single monograph on the North American fauna, although the works by Bailey (1951, 1957), Bailey & Cott (1954), Cott (1956), Mound & O'Neill (1974), Stannard (1957, 1968) and Thomasson & Post (1966) can be used for identification. Chiasson (1986) has considered the Canadian fauna. None of the species recorded from B.C. is rare or endangered (B.S. Heming, in litt.).

NEUROPTEROIDS

A preliminary list of the Neuroptera of B.C. was published by Spencer (1942). This paper included insects that are now placed in the Orders Megaloptera and Raphidioptera.

There has been no recent major revision of the Nearctic Megaloptera although Ross (1937) revised the Nearctic *Sialis*, and Munroe (1951, 1953) sorted out the identity of material from B.C. that Spencer (1942) reported as *Neohermes disjunctus*. Aspöck (1974, 1975) has undertaken a major revision of the Nearctic Raphidioptera, but these publications are not available. A planned revision of the world Raphidioptera by H. Aspöck & C. Aspöck has just been published.

Within the Neuroptera (s.str.) the Sisyridae have been revised by Parfin & Gurney (1956), the Coniopterygidae by Meinander (1972, 1974), and the Canadian Chrysopidae have been re-

viewed by Garland (1982, 1985). The ant-lion tribe Brachynemurini has been revised by Stange (1970). Klimaszewski & Kevan (1985, 1987, 1988, 1992) have revised the Canadian Hemero-biidae.

Twenty neuropteroid species in B.C. may be rare and endangered.

Order MEGALOPTERA

Family Corydalidae

Chauliodes pectinicornis L.

In B.C., recorded from Cloverdale and Cowichan (Spencer 1942).

* *Protochauliodes spenceri* Munroe

In Canada, confined to Vancouver I. Recorded from Departure Bay, Duncan, Goldstream and Langford (Munroe 1953). Elsewhere reported south to California.

Family Sialidae

Sialis hamata Ross

In B.C., recorded only from Creston (Ross 1937). Elsewhere reported from Alberta, Montana, Oregon, Utah, Washington and Wyoming (Ross 1937).

S. velata Ross

In B.C., recorded only from Osoyoos and Salmon Arm. Elsewhere reported from across Canada and the United States (Ross 1937).

Order RAPHIDIOPTERA

Family Raphidiidae

* *Agulla crotchi* Banks

In Canada, recorded only from Summerland. Elsewhere reported from California, Idaho, Nevada, Oregon and Washington (U. Aspöck, in litt.).

Family Inocellidae

* *Negha inflata* (Hagen)

In Canada, recorded from Osoyoos (Blades & Maier 1992). Reported from Arizona, California, Idaho, Montana, Nevada, Oregon, Utah and Washington (U. Aspöck, in litt.).

Order NEUROPTERA (sensu str.)

Family Coniopterygidae

** *Helicoconis similis* Meinander

Endemic to B.C. Recorded only from the top of Moyie Mt. at 2093m (Meinander 1972).

Family Mantispidae

Climaciella brunnea (Say)

In B.C., recorded from Goldstream, Kamloops, Kelowna, Lillooet, Oliver, Osoyoos, Oyama, Peachland, Penticton (Marron L.), Summerland, Vaseux L., Vernon, and Victoria. Elsewhere reported in southern Manitoba, southern Ontario and southern Quebec, as well as across the United States to Central America.

* *Mantispa pulchella* (Banks)

In Canada, recorded from Oliver (Gallagher L., UBC Geology Camp), Summerland (Trout Cr. Park), Vaseux L. and Vernon. Elsewhere reported from Arizona, California, Utah east to Texas, Illinois, Georgia and North Carolina, as well as Panama.

Family Chrysopidae

* *Eremochrysa punctinervis* (McLachlan)

In Canada, recorded only from Lillooet (Seton L.), Oliver and Penticton (Garland 1982).

* *Mallada perfectus* (Banks)

In Canada, recorded only from Penticton and Summerland (Garland 1982). Otherwise reported from Arizona, California, Colorado, New Mexico, Oregon, Utah, Washington, Wyoming and Baja California (Adams & Garland 1982).

* *Meleoma schwarzi* (Banks)

In Canada, recorded only from Penticton (Garland 1979). Otherwise reported from Arizona, California, Colorado, Nevada, New Mexico, Oregon and Utah (Garland 1979).

* *Nineta gravida* (Banks)

In Canada, recorded from Departure Bay and Victoria (Garland 1982). Also recorded from Washington.

* *Nothochrysa californica* Banks

In Canada, recorded from Bowser, Nanaimo, Sidney, South Pender I., Vancouver and Victoria (Garland 1982).

Family Hemerobiidae

Boriomyia fidelis (Banks)

In B.C., recorded only from Rolla (Carpenter 1940). Elsewhere reported from Ontario to New Hampshire, south to South Carolina and Mississippi: the B.C. record is disjunct (Klimaszewski & Kevan 1992).

Micromus posticus (Walker)

In B.C., recorded only from Pink Mt. (Klimaszewski & Kevan 1988). Elsewhere reported from the Yukon, Ontario, Quebec and the eastern United States.

M. subanticus (Walker)

In B.C., recorded only from Penticton (Klimaszewski & Kevan 1988). Elsewhere reported from Manitoba, Ontario, Quebec and throughout the United States.

* *Symphorobius californicus* Banks

In Canada, recorded only from Oliver (Klimaszewski & Kevan 1992). Elsewhere reported from northwestern Mexico, western California and Washington.

* *S. killingtoni* Carpenter

In Canada, recorded only from Osoyoos, Penticton and Vernon (Klimaszewski & Kevan 1992). Elsewhere reported from western and south-central United States and northern Mexico.

Wesmaelius pretiosa (Banks)

In B.C., recorded from Oliver and Penticton (Klimaszewski & Kevan 1987). Elsewhere reported from Quebec, and in the United States from Oregon east to Nebraska and south to Arizona.

Order COLEOPTERA

A catalogue of the beetles of Canada and Alaska has been published by Bousquet (1991), and Arnett (1983a) has compiled a checklist of the Coleoptera of North and Central America and the West Indies.

Hatch (1953-1971) has systematically covered the beetles of the Pacific Northwest, the Carabidae of Canada and Alaska have been monographed by Lindroth (1961-1969) and Kavanaugh (1992) has treated this family in the Queen Charlotte Islands. Only a very few Canadian families have been thoroughly monographed recently (Anderson & Peck 1985; Bright 1976, 1987; Kavanaugh 1986; Wallis 1961).

Currently 114 rare and possible endangered beetle species and subspecies occur in B.C. and are listed below: the order follows Bousquet (1991).

Family Carabidae

* *Omus audouini* Reiche

A rare species in Canada recorded only from Vancouver I. (Victoria) and the adjacent mainland (old fields in Boundary Bay). Elsewhere reported from Oregon and Washington (Boyd & Associates 1982).

* *Cicindela parowana wallisi* Calder

In Canada, recorded only from Okanagan Falls, Oliver and Penticton, but recently the Penticton population, reported by Wallis (1961), has been extirpated (Scudder 1992). The subspecies also occurs in Oregon and Washington (Boyd & Associates 1982).

* *Scaphinotus merkelii* Horn

In Canada, this species has been reported in the Creston area, Wynndel and Goat Mt. L. (Lindroth 1961). Elsewhere it is reported only from northern Idaho (Lindroth 1961).

* *S. johnsoni* Van Dyke

In Canada, this rare species has been reported only on Mt. Arrowsmith, at 610m. on the heavily forested north slope (Lindroth 1961). Elsewhere reported only from the Olympic Peninsula, Washington (Lindroth 1961).

* *Cychrus rickseckeri* LeConte

In Canada, this scarce species has been reported only in the Creston district at Sanca and Wynndel (in rather dense mixed forest along Duck Cr.). Elsewhere reported to be restricted to the western foothills of the Rocky Mountains, along the boundary between Montana, northern Idaho and in north-eastern Washington (Lindroth 1961).

** *Nebria charlottae* Lindroth

Endemic to the Queen Charlotte Islands. Recorded only from northern and western Graham I. (Kavanaugh 1992). The species is restricted to a cobble upper sea beach habitat, and is brachypterous and incapable of flying.

** *N. haida* Kavanaugh

Endemic to B.C. Recorded only from the Queen Charlotte Islands (Graham I. and Moresby I.) and the adjacent mainland (Mt. McNeil, 35 km N. of Prince Rupert) (Kavanaugh 1992). *N. haida* is a brachypterous species, incapable of flight and restricted to alpine areas with sparse vegetation.

** *N. louiseae* Kavanaugh

Endemic to the Queen Charlotte Islands. Recorded from Burnaby I., Hotspring I., Lyell I., Louise I., Moresby I., Ramsay I., Reef I., Talunkwan I., Tanu I. and West Skedans I. (Kavanaugh 1992). The species is restricted to a cobble upper sea beach habitat, and is brachypterous and incapable of flying.

* *Promecognathus crassus* LeConte

In Canada, recorded only from southern Vancouver I. (Comox, Royal Oak, Mt. Arrowsmith, Wellington, Cowichan, Duncan, Langford, Victoria) and the lower mainland (Agassiz, New Westminster, Vancouver) (Lindroth 1961). Elsewhere reported along the Pacific coast south to California (Erwin et al. 1977).

* *Metrius contractus contractus* Eschscholtz

In Canada, recorded only from Vancouver (Lindroth 1961). Elsewhere reported from California and Oregon.

* *Bembidion bowditchi* LeConte

In Canada, this very rare species has been collected only at Kamloops and Trinity Valley (Lindroth 1963). Otherwise reported only from the type locality in Wyoming (Lindroth 1963).

* *B. disjunctum* Lindroth

In Canada, this rare species has been recorded only from Eholt, northwest of Grand Forks, beside a flooded creek (Lindroth 1963). Elsewhere reported only from California, Sierra Nevada (Sonora Pass, 8,000 ft. among gravel along a small cold brook) (Lindroth 1963).

** *B. kalumae* Lindroth

Endemic to B.C. Recorded from Kalum L. (N. Terrace), Price Cr. (Skeena R. opposite Kitwanga) and Stanley (E. of Quesnel) (Lindroth 1963). Lindroth (1963) notes that the distribution is imperfectly known, and G.E. Ball (in litt.) states that it is likely the species is fairly widespread.

* *B. mormon* Hayward

In Canada, restricted to the Okanagan Valley (Buce L., Osoyoos, White L.) (Lindroth 1963). The species occurs at the margins of alkaline lakes and roads. Elsewhere it is reported east to Wyoming and south to California (Erwin et al. 1977).

Family Amphizoidae

* *Amphizoa striata* Van Dyke

In Canada, recorded only from Duncan (Koksilah Cr.) and Little Qualicum Falls Prov. Park (Little Qualicum R.) (Kavanaugh 1986). Elsewhere reported from Oregon and Washington (Kavanaugh 1986).

Family Dytiscidae

* *Agabinus glabrellus* (Motschulsky)

In Canada, recorded only near Ashcroft Manor, Ashcroft. Elsewhere reported from California, Oregon and Washington (Hatch 1953).

* *A. sculptureus* Zimmermann

In Canada, recorded only from Fraser Canyon (Alexandra Lodge), Goldstream Prov. Park and MacMillan Prov. Park. Elsewhere reported from California, Oregon and Washington (Hatch 1953).

Family Leiodidae

** *Hydnobius contortus* Hatch

Endemic to B.C. Recorded from Creighton Valley, Creston, Eagle R., Kettle R. and Salmon Arm (Hatch 1957).

** *H. stacesmithi* Hatch

Endemic to B.C. Recorded from Canyon, Copper Mt. and Creston (Hatch 1957).

** *Anodus mirabilis* Hatch

Endemic to B.C. Recorded from Creston (Hatch 1957).

** *Leiodes dilatata* Hatch

Endemic to B.C. Recorded from Barkerville and Lorna (Hatch 1957).

** *L. tenuis* Hatch

Endemic to B.C. Recorded from Creston (Hatch 1957).

** *Agathidium columbianum* Fall

Endemic to B.C. Recorded from Terrace (Fall 1934).

** *Colo. femorale* Hatch

Endemic to B.C. Recorded from Creston (Hatch 1957).

** *C. tibiale* Hatch

Endemic to B.C. Recorded from Creston (Hatch 1957).

** *C. complicatum* Hatch

Endemic to B.C. Recorded from Creston (Hatch 1957).

** *C. discretum* Hatch

Endemic to B.C. Recorded from Lorna on *Picea engelmanni* (Hatch 1933).

Family Micropeplidae

* *Kalissus nitidus* LeConte

A rare species, in Canada recorded only from Goldstream Prov. Park, near Prince Rupert, and Vancouver (Stanley Park). Elsewhere known only from one specimen from Seattle (Campbell 1968).

* *Micropeplus brunneus* Maklin

A species recorded in Canada from the Queen Charlotte Islands, Steelhead and Vancouver (Campbell 1968), but all records are old and the species has not been collected in the past forty years (J.M. Campbell, in litt.). Elsewhere the species is reported from coastal areas of Alaska south to Oregon. It has been collected from newly cut spruce logs and under wood chips, as well as from *Pseudotsuga*.

* *M. robustus* Campbell

A rare species in Canada recorded only from Creston (13 km W) and Hope (19 km E) (Campbell 1973a). Elsewhere it is reported from only one locality in California and one in Oregon (Campbell 1968). B.C. specimens were collected from flood debris on rivers.

** *M. smetanai* Campbell

Endemic to B.C. Recorded from Hope (19 km E), Midway (6 km W), Burnt Flats (3 km E), Creston (13 km W) and Salmo (3 km S) (Campbell 1973a). One specimen was collected from inside a deserted beaver lodge, while all others were from flood debris (Campbell 1973a).

Family Silphidae

* *Thanatophilus coloradensis* (Wickham)

In Canada, recorded only from one locality on the northern B.C. border (Teslin L.). Elsewhere reported from Alaska, and at high elevations above tree line in Colorado, New Mexico, Utah, Montana and Wyoming (Anderson & Peck 1985).

Family Staphylinidae

* *Pseudohaida rothi* Hatch

In Canada, recorded only from the Upper Carmanah Valley (Campbell & Winchester 1993). Elsewhere reported from Oregon (Hatch 1957; Campbell 1978).

* *Coryphium brunneum* (Hatch)

A rare species, in Canada recorded only from Creston (Hatch 1957). Elsewhere reported only from a single locality in Idaho (Hatch 1957). Specimens were collected in late November and December on snow (J.M. Campbell, in litt.).

* *Xylodromus depressus* (Gravenhorst)

A rare species, in Canada recorded only from Summerland, under bark. Also reported from Alaska (Bousquet 1991) and Oregon (Hatch 1957).

* *Tanyrhinus singularis* Mannerheim

A rare species, in Canada recorded only from Goldstream, Queen Charlotte Islands, Steelhead and Upper Carmanah Valley. Elsewhere reported south along the coast to Oregon (Hatch 1957), and Alaska (Bousquet 1991).

** *Trigonodemus fasciatus* Leech

Endemic to B.C. Recorded only from Vancouver (Leech 1939) and the Upper Carmanah Valley (Campbell & Winchester 1993).

* *Orochares tumidus* (Hatch)

A rare species, in Canada recorded only from Vancouver (Point Grey) (Hatch 1957). Elsewhere reported only from Livingston and McMinnville in Oregon (Hatch 1957).

* *Trigonurus crotchii* LeConte

A rare species in Canada recorded only from Vancouver I. (MacMillan Prov. Park and Port Alberni). Also reported from Oregon and Washington (Hatch 1957).

* *T. dilaticollis* Van Dyke

A rare species in Canada recorded only from Pender Harbour, Queen Charlotte Islands, Steelhead and Vancouver. Also reported from Washington (Hatch 1957)

* *T. sharpi* Blackwelder

A rare species in Canada recorded only from Vancouver I. and Vancouver (under bark). Also reported from Oregon and Washington (Hatch 1957).

* *Bledius monstratus* Casey

In Canada, recorded only from Massett, QCI. Elsewhere reported south to central California on sea beaches (Hatch 1957).

* *Pseudopsis montoraria* Herman

In Canada, recorded only from Mt. Garibaldi. Elsewhere reported south to Arizona and California (Herman 1975).

* *Nanobius serricollis* (LeConte)

In Canada, recorded only from Brunswick, Saanich and Victoria. Elsewhere reported from California, Oregon and Washington (Hatch 1957).

* *Asemobius caelatus* Horn

An extremely rare species, in Canada recorded only from Creston (13 km W) and Salmo (3.2 km S). Elsewhere reported from only a single locality in northern California and Baring (Washington) (Hatch 1957).

Tachinus instabilis Maklin

In B.C., recorded only from Summit L. (mile 392 Alaska Highway) (Campbell 1973b). Elsewhere reported from Alaska and the Yukon (Campbell 1973b).

** *T. smetanai* Campbell

Endemic to B.C. Recorded only from McLeod Meadows in Kootenay Nat. Park (Campbell 1973b).

* *T. raineri* Hatch

In Canada, recorded only from Manning Prov. Park at 1675-2060m (Campbell 1973b). Elsewhere reported south along the Cascades to Oregon (Campbell 1973b).

** *T. stacesmithi* Campbell

Endemic to B.C. Recorded only from Creston (Campbell 1973b).

** *Tachyporus stacesmithi* Campbell

Endemic to B.C. Recorded only from Creston and Kamloops (Campbell 1979).

* *Bolitopunctus muricatus* (Hatch)

In Canada, recorded only from Princeton (Campbell 1993). Elsewhere reported south to California.

* *Neobolitobius varians* (Hatch)

In Canada, recorded only from Aspen Grove, Creston and Vancouver (UBC Campus). Elsewhere reported south to Oregon (Hatch 1957).

* *Stenus ellipticus* Casey

In Canada, recorded only from Inverness in 1910. Elsewhere reported south to California (Blackwelder 1973).

* *S. geminorum* Puthz

In Canada, recorded only from Manning Prov. Park (32 km E. Hope) (Puthz 1973). Elsewhere reported from Oregon and Washington.

* *S. koebelei* Puthz

In Canada, recorded only from Sook R. (Puthz 1973), Mt. Arrowsmith and Cowichan L. Elsewhere reported from Alberta, Oregon and Washington.

- * *S. mundulus* Casey
In Canada, recorded only from Creston (32 km W). Elsewhere reported from Oregon and Washington (Hatch 1957).
- * *S. vespertinus* Casey
In Canada, recorded only from Vancouver I. (Mesachie L., Metchosin). Elsewhere reported from California, Oregon and Washington (Hatch 1957).
- * *S. tahoensis* Casey
In Canada, recorded only from Mesachie L. and Midway (6.4 km W). Elsewhere reported from Nevada (Blackwelder 1973).
- ** *Nordenskioeldia columbiana* Puthz
Endemic to B.C. Recorded only from Yoho Nat. Park (Puthz 1974).
- * *Euaesthetus pacificus* Fall
In Canada, recorded only from the Queen Charlotte Islands (NW Queen Charlotte City). Elsewhere reported from the type locality, Scow Bay, Alaska.
- * *Sunius rugithorax* Hatch
In Canada, this rare species which occurs with ants is recorded only from Creston and Wynndel (Hatch 1957). Elsewhere it is reported from Washington (Hatch 1957).
- * *Medon capitalis* Hatch
In Canada, recorded only from Royal Oak (Hatch 1957). Elsewhere reported south to Oregon (Hatch 1957).
- * *M. truncatus* (Hatch)
In Canada, recorded only from Duncan (Hatch 1957). Elsewhere reported from Idaho, Oregon and Washington (Hatch 1957).
- * *M. ctenophorum* Hatch
In Canada, recorded only from Creston (Hatch 1957). Reported from south-eastern Washington (Hatch 1957).
- * *Orus distinctus* Casey
In Canada, recorded only from Gale. Elsewhere reported south to California (Herman 1964).
- * *O. punctatus* Casey
In Canada, recorded only from Terrace. Elsewhere reported south to California and Colorado (Herman 1964).

Family Histeridae

- * *Plegaderus setulosus* Ross
In Canada, recorded only from Hosmer with ants. This rare species is elsewhere reported south to Oregon (Hatch 1962).
- * *Teretrius montanus* Horn
In Canada, recorded only from Creston and Summerland. Elsewhere reported south to Oregon (Hatch 1962).
- * *Neopachylopus sulcifrons* (Mannerheim)
This rare, ocean beach dwelling species is recorded in Canada only from Boundary Bay. Elsewhere reported south to California (Hatch 1962).

Family Scarabaeidae

- * *Euphoria rufobrunnea* Casey
In Canada, restricted to the South Okanagan (Scudder 1992). Elsewhere reported from New Mexico and Washington.

Family Byrrhidae

* *Exomella pleuralis* (Casey)

In Canada, recorded only from the Queen Charlotte Islands. Elsewhere reported from Alaska (Bousquet 1991) and Oregon.

Family Buprestidae

* *Anambodera gemina* (Horn)

In Canada, recorded only from Alta L. and Mons (Bright 1987). Elsewhere reported from California, Oregon and Washington.

* *Dicerca sexualis* Crotch

In Canada, recorded only from Quamichan L. Elsewhere reported from California, Idaho, Oregon and Washington.

* *Descarpentriesina fraseri* (Chamberlin)

In Canada, recorded only from southern Vancouver I. (Bright 1987). Elsewhere reported south to California.

* *Melanophila californica* Van Dyke

In Canada, recorded only from Oliver on Douglas fir (Bright 1987). Elsewhere reported from California, Idaho, Oregon and Washington.

* *Anthaxia prasina* Horn

In Canada, recorded only from Copper Mt. (Bright 1987). Elsewhere reported from California and Oregon.

* *Chrysobothris beeri* Barr

In Canada, recorded only from Blackwall, Manning Prov. Park (Bright 1987). Elsewhere reported south to Oregon.

* *C. columbiana* Barr

In Canada, recorded only from Midday Valley, Merritt (Bright 1987). Elsewhere reported from eastern Washington.

* *C. pseudotsugae* Van Dyke

In Canada, recorded only from Frye Cr., and Merritt (Bright 1987). Elsewhere reported south to California.

* *C. sylvania* Fall

In Canada, recorded only from Sidney on Douglas fir (Bright 1987). Elsewhere reported south to California.

* *Agrilus arbuti* Fisher

In Canada, recorded only from Creston on *Amelanchier alnifolia* Nutt. (Bright 1987). Elsewhere reported south to California.

Family Tenebrionidae

Eleodes extricatus extricatus (Say)

In B.C., recorded only from Osoyoos (Scudder 1992). Also reported from Alberta, Arizona, Northwest Territories, Saskatchewan, Texas and Mexico.

E. nigrinus nigrinus LeConte

In B.C., recorded only from Osoyoos (Scudder 1992). Reported also from Arizona, Colorado, Idaho and Oregon.

* *Hymenorus caurinus* Fall

In Canada, recorded only from Creston (Hatch 1965). Elsewhere reported south to Oregon (Hatch 1965).

* *H. megops* Hatch

In Canada, recorded only from Pender Harbour (Hatch 1965). Elsewhere reported south to Oregon.

** *Pseudocistela pectinata* Hopping

Endemic to B.C. Recorded only from Midday Valley, Merritt (Hopping 1933).

* *Usechimorpha barberi* Blaisdell

In Canada, this tiny, wingless beetle is recorded only from Captain Cook Lagoon, Brooks Peninsula (Cannings & Cannings 1994). It occurs in leaf litter and elsewhere is reported from California and Oregon.

Family Cephaloidae

* *Cephaloon bicolor* Horn

A rare coastal species, in Canada recorded only from Queen Charlotte Islands, Vancouver I., Metlakatla, Vancouver (UBC Campus) and Cultus I. Also reported from California, Oregon and Washington (Hatch 1965).

* *C. pacificum* Van Dyke

A rare species, in Canada recorded only from Squamish. Also reported from California, Oregon and Washington (Hatch 1965).

Family Oedemeridae

* *Asclera discolor* LeConte

A rare species, in Canada recorded only from Sidney. Elsewhere reported from California, Idaho, Nevada, Oregon and Washington (Hatch 1965; Arnett 1983b).

* *Copidita quadrimaculata* LeConte

A rare species, in Canada recorded only from Agassiz. Also reported from Baja California, California, Oregon and Washington (Hatch 1965; Arnett 1983b).

Family Pythidae

* *Sphalma quadricollis* Horn

A rare species, in Canada recorded only from Agassiz. Also reported from California, Oregon and Washington (Hatch 1965).

Family Pyrochroidae

* *Dendroides marginatus* Van Dyke

In Canada, recorded only from Atbara and Nelson. Elsewhere reported south to California. Also reported from Idaho, Oregon and Washington (Hatch 1965).

* *D. picipes* Horn

A rare species, in Canada recorded only from Victoria. Elsewhere reported south to California. Also reported from Oregon and Washington (Hatch 1965).

Family Salpingidae

* *Rhinosimus lecontei* Blair

In Canada, recorded only from Creston. Also reported from Oregon (Hatch 1965).

* *Aegialites californicus* Motschulsky

In Canada, recorded only from Metlakatla, Queen Charlotte Islands. Elsewhere reported from Alaska (Bousquet 1991) and Oregon (Hatch 1965).

Family Apionidae

* *Apion proclive* LeConte

In Canada, recorded only from Oliver (11 km N). Widely distributed in the United States (O'Brien & Wibmer 1983).

Family Curculionidae

** *Sitona lupinus* Sleeper

Endemic to B.C. Recorded from Creston on *Lupinus sericeus* Pursh. (Sleeper 1955).

* *Paraptochus sellatus* (Boheman)

In Canada, recorded only from North Bend (Hatch 1971). Also reported from Oregon (Hatch 1971).

**** *Hypera publicollis* (LeConte)**

Endemic to B.C. Recorded from Vancouver I. (LeConte 1876; Hatch 1971).

*** *Cleonidius longinasus* R.S. Anderson**

In Canada known only from the south Okanagan (Anderson 1988) and recorded from Larkin, Osoyoos, 6-mile Cr., and Vernon. Elsewhere reported from California, Idaho, Montana, Washington and Wyoming (Anderson 1988).

*** *Smicronyx cinereus* (Motschulsky)**

In Canada, recorded only from Gordon Head, Victoria. Also reported from Oregon and Washington (Hatch 1971).

**** *Magdalis lecontei decepta* Sleeper**

A subspecies endemic to B.C. Recorded from Kelowna, Kootenay Landing and Sanca (Sleeper 1955).

*** *Curculio aurivestris* Chittenden**

In Canada, recorded only from Victoria on Garry oak (*Quercus garryana* Douglas). Elsewhere reported from California, Oregon and Washington (O'Brien & Wibmer 1983).

*** *C. uniformis* (LeConte)**

In Canada, recorded only from Victoria on Garry oak (*Quercus garryana*). Elsewhere reported from Arizona, Baja California, California, New Mexico, Oregon, Utah and Washington (O'Brien & Wibmer 1983).

**** *Macrorhoptus sidalceae* Sleeper**

Endemic to B.C. Recorded from Vancouver, bred from seeds of *Sidalcea hendersoni* Wats. (Sleeper 1957a).

**** *Anthonomus deceptus* Sleeper**

Endemic to B.C. Recorded from Copper Mt. (Sleeper 1955).

*** *Tychius semisquamosus* LeConte**

In Canada, recorded only from Oliver. Elsewhere reported from Baja California, California, Colorado, New Mexico, Oregon, Utah, Washington and Wyoming (O'Brien & Wibmer 1983).

*** *Ceutorhynchus cupreus* Hatch**

In Canada, recorded only from Creston (Hatch 1971). Also reported from Oregon and Washington (Hatch 1971; O'Brien & Wibmer 1983).

**** *C. opertus* W.J. Brown**

Endemic to B.C. Recorded from Oliver (Brown 1931).

**** *C. squamosules* Sleeper**

Endemic to B.C. Recorded from Creston (Sleeper 1957b).

**** *Baris stacesmithi* Sleeper**

Endemic to B.C. Recorded from Creston on *Artemisia gnaphalodes* Nutt. (Sleeper 1955).

**** *Hexarthrum thujae* Brown**

Endemic to B.C. Recorded from the Big Bend Highway (55 km N. Revelstoke) and from log piles at Revelstoke (Brown 1966).

Family Scolytidae

*** *Hylocurus hirtellus* (LeConte)**

In Canada, recorded only from Victoria (Bright & Skidmore 1991). Elsewhere reported south to Baja California on *Alnus*, *Salix* and other broadleaf trees and shrubs.

Order MECOPTERA

Only the family Boreidae is represented in B.C. This taxon has been revised by Penny (1977). Of the five species of *Boreus* in B.C., three species might be considered rare and perhaps endangered.

* *Boreus elegans* Carpenter

In Canada, recorded only from Vancouver (Penny 1977), Squamish (16 km NE, 19 km N), Burke Mt. (Coquitlam), nr. Black Mt. (nr. Horseshoe Bay) and Hollyburn Mt.

* *B. nix* Carpenter

In Canada, recorded only from Ashnola R. Valley (Flat Iron Mt.). Elsewhere reported from Alaska and Montana (Penny 1977).

B. pilosus Carpenter

In B.C., recorded only from Kaslo. Elsewhere reported from Alberta and Montana (Penny 1977).

Order DIPTERA

The Manual of Nearctic Diptera (McAlpine et al. 1981, 1987) treats all the Diptera in Canada to the generic level, and lists the number of species in each genus together with comments on the distribution. However, it does not give a catalogue of species from which an up to date B.C. checklist can be constructed. No such list exists at present, although it is possible to produce a draft list from Stone et al. (1965). Cole (1969) considers the western genera of flies, but only a few families in Canada have been considered in a thorough and comprehensive way (Teskey 1990; Wood et al. 1979; Vockeroth 1992).

In discussions and correspondence with G.W. Byers, R.A. Cannings, D.C. Currie, G.C.D. Griffiths, J.E. O'Hara, D.R. Oliver, J.R. Vockeroth and D.M. Wood, the following 76 possible rare and endangered species have been identified.

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

A preliminary list of the Tipulidae of B.C. was published by Spencer (1948a).

* *Chionea macnabeana* Alexander

In Canada, known only from Manning Prov. Park (Fat Dog Cr.) (S.G. Cannings 1987). A rare, wingless species also recorded from Oregon and Washington (Byers 1983). Fewer than ten specimens are known (G.W. Byers, in litt.).

* *Tipula imbellis* Alexander

In Canada, recorded only from Osoyoos (Spencer 1948a; Scudder 1992). The species is also reported from Washington.

** *Phalacrocer a van cou ver en sis* Alexander

Endemic to B.C. Recorded from Vancouver (Alexander 1927a; Spencer 1948a), and known only from one other locality in B.C. (G.W. Byers, in litt.).

** *Limonia suffusca* (Garrett)

At present listed as endemic to B.C. Known only from types collected at Cranbrook (Garrett 1922; Spencer 1948a).

** *Phyllolabis bryantiana* Alexander

At present listed as endemic to B.C. Known only from the type material from Hector (Alexander 1931; Spencer 1948a).

** *Limnophila columbiana* Alexander

At present listed as endemic to B.C. Known only from the type material from Prince Rupert (Alexander 1927b).

** *L. lobifera* Alexander

At present listed as endemic to B.C. Known only from the type material from milepost 128, Alaska Highway (Alexander 1955).

Family Deuterophlebiidae

The Deuterophlebiidae of the Nearctic have been revised by Courtney (1990).

Deuterophlebia personata Courtney

In B.C. known only from around Hope (Eureka Cr. 3.5 km S. of Hope, Silverhope Cr. 15 km S. of Hope, and Sowerby Ck.) (Courtney 1990). Since the species is also recorded from a single locality in the Yukon, Courtney (1990) suggests lack of records may be because of inaccessible coastal range distribution and lack of collecting.

Family Culicidae

The North American fauna has been considered by Carpenter & LaCasse (1955) and Darsie & Ward (1981). The Canadian fauna has been monographed by Wood et al. (1979). A total of forty-five species are recorded from B.C. with four other doubtful records. Belton & Belton (1981) published a revised list of mosquitos of B.C., adding one additional species to the provincial list. There are five species in Canada known only from B.C., only two of which have a very restricted distribution. Species for further study include the following.

Aedes hendersoni Cockerell

In B.C., recorded for sure only from Sirdar (Zavortink 1972; Belton & Belton 1981). The species may also occur at Vernon (Wood et al 1979). The distribution of the species is from southern B.C. and south central Texas east to southern Quebec and Georgia. Larvae inhabit water-filled rot-cavities in deciduous trees.

* *A. nevadensis* Chapman & Barr

In Canada, so far reported only at Sheen L. in B.C. Elsewhere reported from Idaho, Nevada, Oregon, Utah, Washington and Wyoming (Darsie & Ward, 1981).

A. nigripes (Zetterstedt)

This arctic species has been recorded only from Moosehorn L. at 1500 m in B.C. Larvae usually live in tundra pools. The species is circumpolar north of tree-line from northern Scandinavia across arctic Siberia and Alaska to Greenland and Newfoundland.

Culiseta minnesotae Barr

In B.C., known only from Port Coquitlam (Costello 1977; Belton & Belton 1981). Larvae occur in semipermanent or permanent sedge-cattail marshes. The species occurs from B.C. and Oregon east to Quebec and Maryland.

Family Simuliidae

* *Parasimulium furcatum* Malloch

In Canada, known only from Goldstream Prov. Park and Muchalat L. (12.5 km NW of Gold R.) (Borkent 1992). Otherwise known only from northern California.

** *Prosimulium constrictistylum* Peterson

Endemic to B.C. Known only from 1.6 km E. of Osoyoos (Peterson 1970).

** *P. woodorum* Peterson

Endemic to B.C. Described from Kinnaird (20.6 km and 29.3 km W.), and Cascade (1.5 km W.) (Peterson 1970).

** *Prosimulium* n.sp. near *fulvum* (Coquillett)

A new species known only from Englishman R. Falls, Vancouver I. where it occurs in a temporary seepage with a new species of *Simulium* (n.sp.1) (D.C. Currie, pers. comm.).

* *Simulium* n.sp.1 near *pugetense* (Dyar & Shannon)

A new species known in Canada only from seepages at Goldstream Prov. Park

and Englishman R. Falls, plus a single locality in Oregon (D.C. Currie, pers. comm.).

* *Simulium* n.sp.2 near *virgatum* Coquillett

This new species occurs in Canada only on southern Vancouver I. in both large and small streams, and also in northern Oregon (D.C. Currie, pers. comm.).

Family Chironomidae

A catalogue of the Nearctic Chironomidae has been published by Oliver et al. (1990).

** *Chironomus vancouveri* Michailova & Fischer

Endemic to B.C. Described from Deer L. (Vancouver) (Michailova & Fischer 1986), and recorded to date only from this locality.

** *Doithrix hamiltoni* Saether & Sublette

Endemic to B.C. Described from Marion L. (Saether & Sublette 1983), and recorded to date only from this locality.

** *Heterotanytarsus perennis* Saether

Endemic to B.C. Described from Marion L. (Saether 1975), and recorded to date only from this locality.

** *Odontomesa lutospora* (Garrett)

Endemic to B.C. Described from Cranbrook, and recorded only from this locality (Garrett 1925).

** *Parachaetocladius hirtipectus* Saether

Endemic to B.C. Described from Allouette R., 0.4 km S. of Marion L., and recorded only from this locality (Saether 1969).

** *Pseudosmittia setavena* Saether

Endemic to B.C. Described from Takkakaw Falls road near Field (Saether 1969), and recorded only from this locality.

** *Skutzia inopinata* Reiss

Endemic to B.C. Described from Skutz Falls, Cowichan L. (Reiss 1985), and recorded only from this locality.

Suborder BRACHYCERA

Family Tabanidae

The Canadian fauna has been reviewed and keyed by Teskey (1990). To date sixty-one species have been recorded from B.C., with sixteen reported only from this province in Canada. Of these sixteen, only five have a restricted distribution and may be rare. These are:

* *Chrysops coloradensis* Bigot

In Canada, this is restricted to Vancouver I. and the Gulf Islands (Teskey 1990). The species range extends to Colorado and northern Baja California.

* *C. surdus* Osten Sacken

In Canada, records are from Cameron L. (Vancouver I.) and Swindle I. (Teskey 1990). The species prefers mountainous terrain and occurs in Washington, Oregon, California and western Nevada.

* *Hybomitra aasa* Philip

In Canada, recorded only from the South Okanagan (Osoyoos, Vaseux L.) and Galiano I. (Teskey 1990). In the United States the species occurs south to California.

* *Tabanus laticeps* Hine

In Canada, this is restricted to Vancouver I. and the Gulf Islands (Teskey 1990). The species is found in coastal marshes inundated by tides. It ranges through the west coast states to Baja California.

* *T. punctifer* Osten Sacken

In Canada, this species is restricted to the Okanagan Valley (Teskey 1990). It occurs in wetland habitats, especially in saturated soil on the margins of running or standing water. The species is present over much of the western United States to the western border of the Dakotas, south to Texas and northern Mexico.

Family Mydidae

* *Nemomydas pantherinus* (Gerstaecker)

In Canada, known only from Osoyoos in recent records, with one specimen from Vernon in 1909 (Scudder 1992). Elsewhere reported to occur south to Idaho, California and Colorado.

Family Apioceridae

* *Apiocera barri* Cazier

In Canada, restricted to the South Okanagan (Scudder 1992).

Family Asilidae

The genera of Asilidae have been monographed by Hull (1962).

* *Comantella pacifica* Curran

In Canada, recorded from Penticton and Vernon. Elsewhere reported from Washington.

* *Cyrtopogon ablautoides* Melander

In Canada, recorded only from Oliver (Scudder 1992). Elsewhere reported from Washington.

* *C. anomalus* Cole

In Canada, recorded only from Agassiz. Elsewhere reported from Idaho, Oregon and Washington.

* *Dicolonus nigriventris* Adisoemarto & Wood

A rather rare grassland species in Canada recorded from the Chilcotin, Okanagan and Similkameen Valleys, with records from Keremeos, Osoyoos and Penticton (R.A. Cannings 1989). Elsewhere reported from Washington and northern Idaho.

D. simplex Loew

In B.C., recorded only from southern Vancouver I. Elsewhere reported from California.

Efferia albibarbis (Macquart)

In B.C., restricted to the South Okanagan, and the sandy benchlands around Oliver and Osoyoos, but with one record for Penticton (R.A. Cannings 1989; Scudder 1992). Elsewhere reported across the continent and south to Guatemala. In Canada also known from the beach dunes along L. Erie in southern Ontario (R.A. Cannings 1989).

** *E. okanagana* Cannings MS name

Endemic to B.C. Recorded only from Kalamalka L., Kamloops, and Vaseux L. (R.A. Cannings, in litt.).

Eucyrtopogon spiniger Curran

In B.C. recorded from Copper Mt., Pass Cr. and Victoria. Elsewhere reported from Alberta and the Northwest Territories.

Laphria ventralis Williston

In B.C., recorded only from southern Vancouver I. (Camas Hill, Langford, Ten Mile Pt., Victoria, Wellington) and Galiano I. There are doubtful records for Jesmond and Sugar L. Elsewhere reported from California and Washington.

Lasiopogon pacificus Cole & Wilcox

In Canada recorded only from the Fraser Valley. Elsewhere reported from Oregon and Washington.

* *L. willametti* Cole & Wilcox

In Canada, recorded only from Deas I., Ladner and Miracle Beach (R.A. Cannings, pers. comm.). Elsewhere reported from Oregon and Washington.

Lestomyia sabulona (Osten Sacken)

In B.C., recorded only in the grasslands of the Southern Okanagan (R.A. Cannings 1989; Scudder 1992). Elsewhere reported from the grasslands of Alberta and south to California and Wyoming.

* *Machimus vescus* (Hine)

In Canada, recorded only from Oliver (Scudder 1992). Elsewhere reported from California.

* *Megaphorus willistoni* (Cole)

In Canada, recorded only from Chopaka (Scudder 1992). Elsewhere reported south to California and Arizona.

* *Myelaphus lobicornis* (Osten Sacken)

In Canada, recorded only from Canal Flats and Penticton. Elsewhere reported from California, Idaho and Nevada.

* *Nicocles rufus* Williston

In Canada, recorded only from Saanich and Victoria. Elsewhere reported from California, Oregon and Washington.

Ospriocerus aecus (Wiedemann)

In B.C., recorded only from Keremeos, Oliver, Walhachin (?). The species is widespread in North America.

* *Scleropogon bradleyi* (Bromley)

In Canada, recorded only from southern Vancouver I. (Goldstream, Langford, Lost L., Metchosin, Ten Mile Pt., Victoria) and Gulf Islands (Bodega Ridge, Galiano I.). Elsewhere reported from California.

Family Bombyliidae

The genera of bee flies have been monographed by Hull (1973).

* *Lepidanthrax inauratus* (Coquillett)

In Canada, recorded only from the southern Okanagan (Oliver, Osoyoos, Vaseux L.) (Scudder 1992). Elsewhere reported from Arizona, California, Nevada, Oregon and Washington.

Family Syrphidae

The Syrphinae of Canada have been monographed by Vockeroth (1992).

* *Aemosyrphus polygrammus* (Loew)

In Canada, restricted to the South Okanagan (Scudder 1992). Elsewhere reported south to Montana, California, Colorado and Mexico.

* *Copestylum fasciatum* Macquart

In Canada, restricted to the South Okanagan (Scudder 1992).

** *Melangyna vespertina* Vockeroth

Endemic to B.C. Described from and known only from Surrey (Vockeroth 1980, 1992).

** *Platycheirus hispidipes* Vockeroth

Endemic to B.C. Described from and known only from one male from Terrace (51 km SW) and one male from Michel (Main Wilson Cr.) (Vockeroth 1990, 1992).

** *P. setipes* Vockeroth

Endemic to B.C. Described from and known only from one male from Manning

Prov. Park (Dry Ridge summit), and one male from Robson (Vockeroth 1990, 1992).

Family Anthomyiidae

* *Agromyza oliverensis* Spencer

Restricted to the South Okanagan (Scudder 1992).

Alliopsis arnaudi Griffiths

Described from the Purcell Mountains, and known only elsewhere from the Ogilvie Mountains in the Yukon (Griffiths 1987).

** *Delia euremena* Griffiths

Endemic to B.C. Recorded only from Eureka Mt. in the Monashee Range (Griffiths 1991).

** *D. heraclei* Griffiths

Endemic to B.C. Known only from Remo (11 km SW Terrace) (Griffiths 1993).

** *D. oppidans* (Huckett)

Endemic to B.C. Recorded from Kaslo, Robson and Victoria Distr. (Griffiths 1991).

D. pacifica Griffiths

A species endemic to Canada and known only from the Terrace District and Grassy L. in southern Alberta (Griffiths 1993).

* *D. setifirma* (Huckett)

In Canada, recorded from Apex Mt. Elsewhere widespread in the mountains of western United States (Griffiths 1992).

** *D. submetallica* Griffiths

Endemic to B.C. Recorded only from Diamond Head Trail near Squamish at 975-1220 m. (Griffiths 1992).

* *Eutrichota conscripta* (Huckett)

In Canada, recorded only from Copper Mt. on birch sap. Elsewhere reported from California, Colorado and Idaho (Griffiths 1984b).

* *E. impolita* (Huckett)

In Canada, recorded only from Copper Mt. on birch sap. Elsewhere reported in mountains of California, New Mexico, Oregon and Utah (Griffiths 1984b).

* *E. occidentalis* Griffiths

In Canada, recorded only from Manning Prov. Park. This alpine species is reported elsewhere in the western United States (Griffiths 1984b).

Melanagromyza miranda Spencer

In B.C., restricted to the South Okanagan (Scudder 1992).

Pegomya crassiforceps Griffiths

A species endemic to Canada, and recorded only from Lakelse L. and Nova Scotia (Griffiths 1983).

* *P. fumipennis* Huckett

In Canada, recorded only from Cranbrook. Elsewhere reported only from Loon L., Washington (Griffiths 1984a).

P. setibasis Huckett

A rare species endemic to Canada and recorded only from Mt. Kobau (Blades & Maier 1992), Whitehorse in Yukon and Val Marie in Saskatchewan (Griffiths 1983). The larvae probably feed on *Orobancha fasciculata* Nutt. (G.C.D. Griffiths, in litt.).

* *P. ventralis* Stein

A Palearctic species recorded in North America only from Atlin (Griffiths 1984a).

* *Phorbia impula* (Huckett)

A rare species described from Nicola L. (Huckett 1948), and now known to occur in California (G.C.D. Griffiths, in litt.).

Family Tachinidae

** *Baeomyia juniperi* O'Hara

Endemic to B.C. Recorded only from the type locality Williams L. (south end of lake) (O'Hara 1984).

* *Periscepsia polita* Brooks

In Canada, recorded only from Agassiz and Cultus L. Elsewhere reported from Washington (Bellingham, Puyallup and Illahee) and Oregon (D.M. Wood, pers. comm.).

Order LEPIDOPTERA

A checklist of the Lepidoptera of America north of Mexico was published by Hodges et al. (1983). The last annotated checklist of the Macrolepidoptera of British Columbia was by Llewellyn Jones (1951), although an updated checklist of the butterflies of B.C. containing 174 species has been prepared by C.S. Guppy and J.H. Shepard (unpublished). A list of moths in B.C. is being prepared by J.H. Shepard.

The butterflies of North America have been well documented and illustrated by Howe (1975) and Scott (1986), with the butterflies of Oregon considered by Dornfeld (1980). The butterflies of Mt. Revelstoke and Glacier Nat. Park were documented by Threatful (1982).

There is no adequate treatment of moths of North America since Holland (1919), although the Moths of America North of Mexico is now in production, and some taxa have been reviewed (Bolte 1990; McGuffin 1977, 1987, 1988).

Information on rare and endangered butterflies in B.C. has been kindly provided by C.S. Guppy and is taken from Guppy et al. (1994). A similar consideration of moths is premature at present. A total of 61 butterflies and moths are listed as rare and potentially endangered below.

Family Hesperiidae

* *Erynnis propertius* (Scudder & Burgess) [Propertius Dusky Wing].

In Canada, recorded from southern Vancouver I. and the Gulf Islands, as well as Hope and Pemberton. Classified as vulnerable by Guppy et al. (1994). The species is restricted to the Pacific Coast, extending from southern B.C. to northern Baja California (Howe 1975; Scott 1986) and is very abundant throughout western Oregon (Dornfeld 1980).

Erynnis afranius (Lintner) [Afranius Dusky Wing]

In B.C., known from only one population near New Aiyansh, so the species may be vulnerable (Guppy et al., 1994). This is a mountain species known to range from Montana and western North Dakota south to New Mexico, Arizona, south-western California and Mexico (Howe 1975). The host plant is *Lupinus*.

Hesperia comma assiniboia (Lyman) [Common Branded Skipper]

In B.C., this subspecies is confined to the Peace R. lowlands, and is regarded as vulnerable by Guppy et al. (1994). It is a northern prairie inhabitant occurring from Alberta to Manitoba and south into North Dakota (Howe 1975).

Hesperia nevada (Scudder) [Nevada Skipper]

In B.C., restricted to the Similkameen and Okanagan Valleys, and considered vulnerable by Guppy et al. (1994). The species ranges through the boreal regions of, and the boreal slopes bordering, the Great Basin from interior B.C., eastern Washington, Oregon and California eastward through the higher parts of Nevada and Utah and into the Rocky Mountains from Alberta to Colorado, south to New

Mexico and Arizona (Howe 1975). The preferred food plant in California is *Stipa occidentalis* Thurb. (Howe 1975).

* *Polites draco* (Edwards) [Draco Skipper]

In B.C., recorded only near Atlin, and considered vulnerable by Guppy et al. (1994). This is a Rocky Mountain species, ranging from Alberta and Saskatchewan south through Montana, Wyoming, Colorado and New Mexico, west to Idaho, Arizona and Utah (Howe 1975).

Polites sonora sonora (Scudder) [Sonora Skipper]

In B.C., confined to the southern Okanagan Valley and Similkameen, and considered threatened by Guppy et al. (1994). This subspecies ranges through the western portion of the Great Basin from B.C. to southern Nevada, in the Sierra Nevada, and from southern California to Baja California (Howe 1975).

Euphyes vestris metacomet (Harris) [Dun Skipper]

In B.C., this subspecies is known from only a few populations on southern Vancouver I. and the Fraser Canyon, and so is considered vulnerable by Guppy et al. (1994). The subspecies ranges through most of the United States (except California and Baja California) and southern Canada (Howe 1975). The larvae food plants are sedges (*Cyperus*) and grasses (*Tridens*) (Dornfeld 1980).

Family Papilionidae

Papilio machaon pikei Sperling [Old World Swallowtail]

In B.C., this subspecies is confined to the Peace R. lowlands, and so is considered threatened in B.C., and vulnerable nationally and globally (Guppy et al., 1994). The subspecies occurs also in Alberta.

* *P. indra indra* Reakirt [Indra Swallowtail]

In Canada, known only from one population in Manning Prov. Park and considered vulnerable by Guppy et al. (1994). The nominate subspecies occurs in California (Sierra Nevada and the northern part of the state), Oregon and Washington, eastward through Utah, Idaho and Wyoming to north-central Colorado and western South Dakota (Howe 1975). Larvae feed on umbelliferous plants, especially *Lomatium* (Dornfeld 1980).

Family Pieridae

** *Euchloe ausonides* (Lucas) subsp. n. [Large Marble]

According to Guppy et al. (1994), this undescribed subspecies, endemic to southern Vancouver I., apparently is now extinct, although there is a very small chance that an undiscovered population may exist on one of the Gulf Islands. Only 13 specimens are known to exist in museums around the world, the last specimen collected was in 1908 on Gabriola I. Records show the known world distribution consisted of two populations on Vancouver I. (Langford and Victoria) and one on Gabriola I. Other subspecies of *E. ausonides* are widespread in western North America, from Alaska south to California east of the coastal mountain ranges.

Family Lycaenidae

Gaeides xanthoides dione (Scudder) [Large Copper]

In B.C., known only from one population at Elizabeth L. at Cranbrook, and thus considered endangered (Guppy et al. 1994). The larval food plant is *Rumex hymenosepalus* Torrey outside B.C., and the subspecies occurs in the midwestern prairies and the Great Plains from Alberta, Saskatchewan and Manitoba southward to northwestern Illinois, Iowa, Missouri and Oklahoma (Howe 1975).

* *Epidemia nivalis browni* (dos Passos) [Nivalis Copper]

In B.C., restricted to the Okanagan Valley (Osoyoos, Summerland, Westbank) (Scudder 1992) and thus vulnerable (Guppy et al., 1994). The larval food plant is *Polygonum douglasii* Greene (Howe 1975; Dornfeld 1980; Scott 1986). The sub-

species occurs from Montana, Idaho and Washington, south to Colorado, Utah and Nevada (Howe 1975).

* *Satyrrium behrii columbia* (McDunnough) [Behr's Hairstreak]

In Canada, restricted to the south Okanagan Valley (Scudder 1992) and considered threatened by Guppy et al. (1994). This is a Pacific Northwest subspecies, with larval food plant being *Purshia tridentata* (Howe 1975).

* *S. fuliginosum semiluna* (Klots) [Sooty Gossammer Wing]

In Canada, restricted to Anarchist Mt. and the Similkameen Valley and considered threatened by Guppy et al. (1994). The subspecies ranges from northwest Colorado to Alberta (Howe 1975), but the Alberta record is an old one from the extreme southwest part of the province (Guppy et al. 1994).

* *S. californicum* (Edwards) [California Hairstreak]

In B.C., restricted to the south Okanagan Valley and Merritt, and considered threatened by Guppy et al. (1994). The species ranges south to California (Howe 1975), with larva feeding on ceanothus, oak and mountain mahogany (Dornfeld 1980).

S. liparops fletcheri (Michener & dos Passos) [Striped Hairstreak]

In B.C., this species occurs only in the Peace R. lowlands, and is considered threatened (Guppy et al., 1994). The subspecies ranges east to southern Manitoba (Howe 1975).

Callophrys affinis washingtonia (Clench) [Immaculate Green Hairstreak]

In B.C., confined to the Okanagan Valley, north to Vernon (Scudder 1992) and considered vulnerable by Guppy et al. (1994). The subspecies occurs in Washington (Howe 1975) and Oregon (Dornfeld 1980). The larval food plant is *Eriogonum* (Dornfeld 1980).

* *Mitoura johnsoni* (Skinner) [Johnson's Hairstreak]

In Canada, the historical range included southern Vancouver I. (Shawnigan L.), Greater Vancouver, and Spuzzum in the vicinity of Hope. Extant populations are known only from the Greater Vancouver area (Stanley Park, Lynn Canyon Park, Pacific Spirit Park, and the UBC Research Forest at Haney) (Guppy et al., 1994). The species is clearly endangered in B.C. Howe (1975) notes that this species is extremely rare, and occurs locally from extreme southern B.C. to central California in the Cascades and Sierras. In Oregon, the species occurs in the coastal mountains and in forests along the western slope of the Cascades, with a single record from near Baker in northeastern Oregon (Dornfeld 1980). The larvae feed on *Arceuthobium campylopodum* Engelm., a dwarf mistletoe parasitic on *Tsuga heterophylla* (Raf.) Sarg. (Howe 1975).

* *M. barryi acuminata* Johnson [Barry's Hairstreak]

In Canada, there are two known populations on Vancouver I., one at Yellow Point near Ladysmith, and the other around the eastern edge of the Saanich Peninsula; there is also a very old historical record from Esquimalt (Guppy et al., 1994). This species is endangered in Canada.

* *Incisalia mossii mossii* (Edwards) [Moss' Elfin]

In Canada, this butterfly occurs only on the rocky knolls and cliffs of southern Vancouver I. and some of the Gulf Islands, and is considered vulnerable by Guppy et al. (1994). The subspecies occurs along the coast to Oregon and at lower and middle elevations of the Northwest (Dornfeld 1980). The host plant in B.C. is *Sedum spatulifolium* Hook. (C.S. Guppy, pers. comm.).

Everes comyntas comyntas (Godart) [Eastern Tailed Blue]

In B.C., known from a single population at Proctor L. in the East Kootenays, and thus considered vulnerable (Guppy et al., 1994). This nominate subspecies is widely distributed east of the 100th meridian, and extends from Quebec (Mon-

trear) south to Florida, with isolated populations in coastal Oregon and California (Howe 1975). The host plant is legumes, particularly clover (*Trifolium*) (Dornfeld 1980).

* *Plebejus saepiolus insulanus* Blackmore [Greenish Blue]

In Canada, this subspecies is restricted to southern Vancouver I. The butterfly is considered endangered in B.C., as no extant populations are known (Guppy et al., 1994). The subspecies occurs from northwest California north to southwest B.C., east to Montana, west Colorado, Nevada and northern Utah (Scott 1986). The host plants are various Leguminosae, especially clover (*Trifolium*) (Scott 1986).

** *Icaricia icariodes blackmorei* (Barnes & McDunnough) [Icarioides Blue]

In Canada, known from only one extant population on Green Mt. near Nanaimo and hence endangered (Guppy et al., 1994; C.S. Guppy, pers. comm.). The subspecies was described from Goldstream, and Howe (1975) reports it also to occur in the western lowlands of mainland British Columbia, but it would seem to be a Vancouver I. endemic. The host plant is probably *Lupinus* spp. and *Trifolium* spp. (Llewellyn Jones 1951), although Guppy (pers. comm.) considers *Lupinus* to be the only food plant used.

Family Riodinidae

* *Apodemia mormo mormo* (Felder & Felder) [Mormon Metalmark]

There are only two historical records of this butterfly in Canada from the South Okanagan, and now only one extant population near Keremeos. This is obviously an endangered species (Scudder 1992; Guppy et al., 1994). This nominate subspecies occurs throughout the Great Basin from south-western Colorado and southern Wyoming to the eastern edges of California (Howe 1975). The larval food plant is *Eriogonum* (Howe 1975).

Family Nymphalidae

Speyeria cybele pseudocarpenteri (Chermock & Chermock)
[Great Spangled Fritillary]

In B.C., confined to the Peace R. canyon and considered threatened by Guppy et al. (1994). This subspecies occurs in Alberta, Saskatchewan and Manitoba and is abundant in Riding Mt. (Man.) and Cypress Hills (Alta.) (Howe 1975).

S. aphrodite manitoba (Chermock & Chermock) [Aphrodite Fritillary]

In B.C., confined to the Peace R. canyon and considered threatened by Guppy et al. (1994). This is a subspecies of the northern Great Plains, with the larval host plant being violets (Violaceae) (Scott 1986).

* *S. zerene bremneri* (Edwards) [Zerene Fritillary]

This subspecies in B.C. is reported from southern Vancouver I. and the Lower Fraser Valley (Llewellyn Jones 1951), but there are now no extant populations known, so the butterfly must be considered endangered in B.C. (Guppy et al., 1994). The subspecies occurs from the coast ranges of extreme northwestern California to Haines in Alaska with larval host plants being violets (Scott 1985).

Phyciodes batesii (Reakirt) [Tawny Crescent]

In B.C., restricted to the Peace R. canyon, and considered threatened by Guppy et al. (1994). The range of the species is in the Canadian and northern Upper Austral zone east to Ontario, Quebec and New England, the larvae feeding on Aster (Howe 1975).

Euphydryas gillettii (Barnes) [Gillette's Checkerspot]

In B.C., known only from three populations in the eastern Kootenays and thus considered vulnerable (Guppy et al., 1994). The species occurs in Wyoming, Montana, Idaho and several localities in Alberta (Howe 1975). Scott (1986) lists a wide

range of larval food plants from the Caprifoliaceae, Scrophulariaceae and Valerianaceae.

E. anicia helvia (Scudder) [Anicia Checkerspot]

In B.C., recorded from Atlin and considered vulnerable by Guppy et al. (1994).

* *E. chalcadon perdiccas* (Edwards) [Chalcadon Checkerspot]

This subspecies in Canada was formerly known from two populations on southern Vancouver I., one on Mt. Finlayson (north of Victoria) and the other on Mt. Tshalem (east of Duncan). The former has been extirpated, and the latter may likewise no longer be present, so the subspecies in Canada is now considered extirpated (Guppy et al., 1994). At present the subspecies is limited to the Puget Sound area of western Washington, where the larval food plant is suspected to be *Penstemon* (Howe 1975).

* *E. editha taylori* (Edwards) [Taylor's Checkerspot]

In Canada, this subspecies is known only from two extant populations, one in a powerline right-of-way between Mill Bay and Shawnigan L., and the other along the shore in Helliwell Prov. Park on Hornby I. (Guppy et al. 1994). Guppy et al. (1994) report that many populations were known historically from the Saanich Peninsula, but all appear to have been extirpated, so they consider the subspecies to be endangered in B.C. Elsewhere the range of the subspecies extends south along the coast to Oregon, and in a slightly modified form along the east side of the Cascade Mountains of Washington and the mountain ranges in eastern Oregon (Howe 1975).

Limnitis archippus archippus (Cramer) [Viceroy]

Recorded in the southern interior between 1913 and 1920, with the last collected at Lillooet in 1930. Guppy et al. (1994) consider the species extirpated in B.C., and since the larval food plant is commonly cultivated apple, perhaps the decline and extirpation may have been brought about by use of pesticides in apple orchards. The species occurs in eastern Washington and northeastern parts of Oregon, where larvae are night feeders on willows and poplars (Dornfeld 1980). The general distribution of the species is from southern Canada and New England south to Georgia and Mississippi, west to eastern Colorado and Montana (Howe 1975).

Family Satyridae

Coenonympha tullia benjamini McDunnough [Ringlet]

This subspecies in B.C. occurs in restricted areas of both the Flathead region of the Kootenays and the Peace R. lowlands, and is considered vulnerable by Guppy et al. (1994). The subspecies is otherwise reported from Alberta, Manitoba, Saskatchewan, northern Montana and the Dakotas (Howe 1975).

* *C. tullia insulana* McDunnough [Ringlet]

In Canada, this subspecies is restricted to southern Vancouver I. and is considered vulnerable by Guppy et al. (1994), because the species is bivoltine and larvae require green grass for food. The subspecies also occurs along the northern coast of western Washington (Howe 1975).

Cercyonis pegala ino Hall [Common Wood Nymph]

In B.C., this subspecies is confined to the Peace R. lowlands and is considered vulnerable by Guppy et al. (1994). The food plant is grasses and the subspecies occurs in Alberta, Manitoba, North Dakota and Montana (Howe 1975).

Erebia epispodea freemani Ehrlich [Common Alpine]

In B.C., this subspecies is confined to the Peace R. lowlands and is considered vulnerable by Guppy et al. (1994). The food plant is grasses and the subspecies occurs throughout the Canadian Prairie Parkland (Alberta, Saskatchewan and Manitoba) (Howe 1975).

Oeneis uhleri varuna (Edwards) [Uhler's Arctic]

In B.C., this subspecies is restricted to the Peace R. canyon and considered threatened by Guppy et al. (1994). Larvae feed on grasses and the subspecies ranges into Alberta, Saskatchewan, Manitoba, North Dakota, South Dakota and western Nebraska (Howe 1975).

O. alberta alberta Elwes [Alberta Arctic]

In B.C., this nominate subspecies is restricted to the Peace R. canyon and is considered threatened by Guppy et al. (1994). Larvae feed on grass and the butterfly ranges into Alberta, Saskatchewan, Manitoba and in scattered localities in the mid-western United States (Scott 1986).

Family Saturniidae

Hemileuca nuttalli (Strecker)

In B.C., restricted to the South Okanagan (Osoyoos) (Llewellyn Jones 1951; Scudder 1992). The food plant is *Spiraea* spp.

Hyalophora gloveri (Strecker)

In B.C., recorded from Charlie L. near Ft. St. John (Cannings & Guppy 1989). There is also one specimen from Williams L. in the Royal B.C. Museum. The larvae have been collected elsewhere on silver berry (*Eleagnus argentea* Pursh.) and *Salix*.

Family Arctiidae

* *Bruceia pulverina* Neum.

In Canada, recorded only from Lillooet (Seton L.), Keremeos (Shingle Cr. Rd.) and Okanagan Falls (5 km SE) (J.H. Shepard, in litt.).

Family Noctuidae

* *Admetoris similaris* Barnes

A Great Basin species, restricted to the South Okanagan in Canada, recorded from Oliver and Vaseux L. (Scudder 1992).

* *Apamea atriculava* (Barnes & McDunnough)

In Canada, recorded only from southern Vancouver I. (Departure Bay, Duncan, Quamichan L., Victoria, Wellington). Otherwise known only from two localities in Oregon (J.D. Lafontaine, in litt.).

* *A. centralis* (Smith)

A Sierra Nevada-Cascade species collected only near Keremeos (Shingle Cr. Road) (J.D. Lafontaine, in litt.).

* *A. cuculliiformis* (Grote)

A widespread western United States species, known in Canada only from one specimen collected 5 km south of Sidney (J.D. Lafontaine, in litt.).

* *A. maxima* (Dyar)

A coastal marsh species, in Canada collected only at three locations (5 km S. of Sidney, Tlell and Cape Cook) (J.D. Lafontaine, in litt.). Known from four locations in Oregon and many in California.

* *Autographa speciosa* Ottol

A rare species in Canada with one extant population known from Quamichan on Vancouver I., and with only two locations in the United States (J.D. Lafontaine, in litt.).

* *Copablepharon absidum* (Harvey)

A Great Basin species, in Canada restricted to the South Okanagan, and recorded only from Osoyoos (Scudder 1992).

** *Euchalcia borealis* Lafontaine & Poole

Endemic to B.C. Known only from the unique holotype collected at Moosehorn L., 132°07'N 58°10'W (Lafontaine & Poole 1991).

* *Euxoa macleani* McDunnough

A subalpine species, known from only three localities (12 specimens) in B.C., namely Mt. McLean, near Lillooet (1 spec. type), Pinewoods in Manning Prov. Park (1 spec.) and at 2165m, Blowdown Pass near Duffey L. (10 spec., Troubridge, 1992). Otherwise recorded only from State Peak, Okonogan Co., Wash. (6 spec.) (J.D. Lafontaine, in litt.).

Heliothis paradoxus Ert

In B.C., restricted to the South Okanagan (Osoyoos) (Llewellyn Jones 1951; Scudder 1992).

** *Lasiestra macleani* (McDunnough)

Endemic to B.C., known only from Mt. McLean (Llewellyn Jones 1951).

* *Trichoclea edwardsi* Smith

In Canada, this species is recorded only from a coastal marsh and dune area 5 km S. of Sidney (KOA Campground). In the U.S., north of California, known only from one locality near Seattle (J.D. Lafontaine, in litt.).

Family Geometridae

* *Anacamptodes clivinaria profanata* (Barnes & McDunnough)

In Canada, recorded only from Hedley, Oliver and Osoyoos (McGuffin 1977). Occurs from B.C. to California and Colorado, with larvae reported from *Philadelphus lewisi* Pursh., *Cercocarpus ledifolius* Nutt., *Purshia tridentata* and *Rosa* sp.

* *Chlorosea banksaria* Sperry

In Canada, recorded for sure only from southern Vancouver I. (Duncan, Goldstream, Shawnigan, Victoria, Wellington) (McGuffin 1988), although Llewellyn Jones (1951) also reports the species from Fairview and Kaslo. The species occurs south to California, the larvae having been reported on *Ceanothus thyriflorus* Esch., *Alnus rubra* Bong., *Prunus emarginata* (Dougl.) D. Dietr. and *Ribes* sp.

* *Eupithecia gilvipennata* Cassino & Swett

In Canada, recorded only from Wellington (Bolte 1990). The species occurs south to Santa Rosa, California, the food plant of the larvae being unknown.

** *E. harrisonata* MacKay

Endemic to B.C. Described originally from Harrison L. (MacKay 1951) and now recorded from southwestern B.C., including Vancouver I. (Bolte 1990). Usually found on *Tsuga* sp., and occasionally on *Larix* sp. and *Pseudotsuga menziesii* (Mirb.) Franco.

** *Meris suffusaria* McDunnough

Endemic to B.C. Known only from the unique male holotype collected at Shingle Cr. Road, Keremeos (McDunnough 1940; McGuffin 1987).

* *Prochoerodes amplicineraria* (Pearsall)

In Canada, recorded only from Oliver and Osoyoos (McGuffin 1987). Occurs from B.C. to Utah, with larvae on *Salix*.

** *Xanthorhoe clarkeata* Ferguson

Endemic to B.C. This day flying moth is recorded only from the Queen Charlotte Islands (Ferguson 1987).

Family Nepticulidae

** *Stigmella stigmaciella* Wilkinson & Scoble

Endemic to B.C., and known only from type material from Vernon on *Crataegus* (leaf miner) (Wilkinson & Scoble 1979).

Order TRICHOPTERA

Fischer (1960-1973) has published a catalogue of the world Trichoptera and Wiggins (1977) has monographed the larvae of the North American caddisfly genera. To date 285 species of caddisfly have been recorded from B.C. (Nimmo & Scudder 1979, 1984; Nimmo 1991; A.P. Nimmo, in litt.).

There are four Trichoptera species endemic to B.C. Other species are known only from a single locality in B.C. This probably represents a lack of collecting, rather than a truly limited distribution. However, they are included here in the list of 74 species below.

Family Brachycentridae

* *Amiocentrus aspilus* (Ross)

In Canada, recorded only from 10 km W. of Fernie (Nimmo & Scudder 1979). Elsewhere reported from California, Colorado, Montana, Nevada, Utah and Wyoming.

* *Eobrachycentrus gelidae* Wiggins

In Canada, recorded only from 1.6 km W. of the Allison Pass summit (Nimmo & Scudder 1979). Elsewhere reported from Oregon and Washington.

Family Glossosomatidae

* *Agapetus taho* Ross

In Canada, recorded only from 10.8 km E. of Christina L. (Nimmo & Scudder 1984). Elsewhere reported from California.

Family Hydropsychidae

* *Hydropsyche amblis* Ross

In Canada, recorded only from Alta L. (Ross & Spencer 1952; Nimmo & Scudder 1979). Elsewhere reported from Oregon and Washington.

H. californica Banks

In B.C., recorded only from Cowichan L. (Nimmo & Scudder 1979). This species occurs east to Minnesota and south to California and Colorado.

* *H. jewetti* Denning

In Canada, recorded only from 1-Mile Cr., north of Princeton (Nimmo & Scudder 1984). Elsewhere reported from Montana.

H. riola Denning

In B.C., recorded only from Canim L. (Nimmo & Scudder 1979). The range of this species extends from Alaska to New Hampshire.

Family Hydroptilidae

Hydroptila consimilis Morton

In B.C., recorded only from Soda Cr. (Nimmo & Scudder 1979). The range of this species extends to Arizona, Kentucky, Manitoba and New Hampshire.

Ithytrichia clavata Morton

In B.C., so far recorded only from Cultus L. and Sardis (Nimmo & Scudder 1979). This is a Holarctic species.

* *Ochrotrichia stylata* Ross

In Canada, recorded only from around Cache Cr. (Nimmo & Scudder 1984). Elsewhere reported from South Dakota to Utah.

Orthotrichia cristata Morton

In B.C., recorded only from Chilliwack (Nimmo & Scudder 1979). The range of this species extends east to Florida and New Hampshire.

* *Oxyethira aeola* Ross

In Canada, recorded only from Vancouver (Nimmo & Scudder 1979). Also reported from New Hampshire.

* *O. michiganensis* Mosely

In Canada, recorded only from Soda Cr. (Nimmo & Scudder 1979, 1984). Elsewhere reported from Michigan, New Hampshire and New York.

* *Palaeagapetus nearcticus* Banks

In Canada, recorded only from Mt. Benson (Nimmo & Scudder 1979 as *P. guppyi* Schmid). Reported south to California.

Family Lepidostomatidae

* *Lepidostoma hoodi* Ross

In Canada, restricted to southeast Vancouver I. (Departure Bay, Wellington) (Nimmo & Scudder 1979). Elsewhere reported from Oregon and Washington.

* *L. jewetti* Ross

In Canada, restricted to southern Vancouver I. (Englishman R., Malahat, Millstone R., Nanaimo, Wellington) (Nimmo & Scudder 1979). Elsewhere reported from California, Oregon and Washington.

* *L. quercina* Ross

In Canada, restricted to southern Vancouver I. (Cameron L., Wellington) (Nimmo & Scudder 1979). Elsewhere reported from Idaho, Montana, Oregon and Washington.

Family Leptoceridae

Ceraclea arielles (Denning)

In B.C., recorded only from 75.9 km W. of Prince George (Nimmo & Scudder 1984). The range of this species extends to north-central North America.

* *C. coph* (Ross)

In Canada, recorded only from Kaslo (Nimmo & Scudder 1979). Elsewhere reported from Wyoming.

C. latahensis (Smith)

In B.C., recorded only from Seeley L., W. of Hazelton (Nimmo & Scudder 1984). The range of this species extends to central western North America.

C. maculata (Banks)

In B.C., recorded only from Langford (Nimmo & Scudder 1979). The range of this species extends to central and eastern North America

C. nigronervosa (Retzius)

In B.C., recorded only from Francois L. village on the Stellako R. (Nimmo & Scudder 1979). This is a Holarctic species.

Oecetis ochracea (Curtis)

In B.C., recorded only from Charlie L., near Fort St. John (Nimmo & Scudder 1979). This is a circumpolar species.

Triaenodes nox Ross

In B.C., recorded only from Creston (Nimmo & Scudder 1984). Elsewhere reported from Ontario and New Hampshire.

Family Limnephilidae

* *Allocosmoecus partitus* Banks

In Canada, recorded only from Goldstream camp, Victoria (Nimmo & Scudder 1979). Elsewhere reported from Idaho, Oregon and Washington.

Allomyia cascadis (Ross)

In B.C., recorded only from Mt. Revelstoke Nat. Park at 1768m (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Montana, Oregon and Washington.

* *A. cidoipes* (Schmid)

In Canada, recorded only from 15 km E. of Hope (Nimmo & Scudder 1984). Elsewhere reported from Oregon and Washington.

Apatania shoshone Banks

In B.C., recorded only from Atlin (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Colorado and Wyoming.

Asynarchus lapponicus Zetterstedt

In B.C., recorded only from Terrace (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Labrador, Nova Scotia, Greenland, Scandinavia and Siberia.

A. mutatus (Hagen)

In B.C., recorded only from Atlin (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Labrador, Northwest Territories to Ontario.

Homophylax acutus Denning

In B.C., recorded only from Mt. Revelstoke Nat. Park at 1859m (Nimmo & Scudder 1984). Elsewhere reported from Alberta and Idaho.

* *H. flavipennis* Banks

In Canada, recorded only from the Nicolum R. (Nimmo & Scudder 1979). Elsewhere reported from Colorado.

* *Lenarchus brevipennis* Banks

In Canada, recorded only from Ketchum L. (Nimmo & Scudder 1979). Elsewhere reported from Colorado, Oregon and Wyoming.

L. crassus (Banks)

In B.C., recorded only from D'Arcy (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Massachusetts and Quebec.

* *L. gravidus* Hagen

In Canada, recorded only from Wellington (Nimmo & Scudder 1979). Elsewhere reported from California and Oregon.

* *Limnephilus acula* Ross & Merkley

In Canada, recorded only from Nicola (Nimmo & Scudder 1979). Elsewhere reported from Washington.

L. alvatus Denning

In B.C., recorded only from Westwick L. in the Cariboo (Nimmo & Scudder 1984). Also reported from Alberta.

L. canadensis Banks

In B.C., recorded only from a pond near Charlie L., near Fort St. John (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Maine, Minnesota, Oregon and Saskatchewan.

** *L. chilcotinensis* Nimmo

Endemic to B.C. Recorded from Alexis L. (Nimmo 1991).

* *L. concolor* Banks

In Canada, recorded only from Wellington (Nimmo & Scudder 1979). Elsewhere reported from Washington.

L. labus Ross

In B.C., recorded only from Langford (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Colorado, Idaho and Saskatchewan.

* *L. lunonus* Ross

In Canada, recorded only from southern Vancouver I. (French Cr., Wellington) (Nimmo & Scudder 1979). Elsewhere reported from California, Oregon and Washington.

* *L. morrisoni* Banks

In Canada, recorded only from Wellington (Nimmo & Scudder 1979). Elsewhere reported from California, Nevada, Oregon and Washington.

L. pallens (Banks)

In B.C., recorded only from Atlin (Nimmo & Scudder 1984). Elsewhere reported from Alaska, Yukon, Northwest Territories, and middle of L. Michigan.

* *L. santanus* Ross

In Canada, recorded only from Iskut (Nimmo & Scudder 1984). Elsewhere reported from Oregon.

L. sublunatus Provancher

In B.C., recorded only from Kimberley (Nimmo & Scudder 1979). Elsewhere reported from Alberta to Colorado, Maine and Quebec.

* *L. sylviae* Denning

In Canada, recorded only from Mt. Seymour (Nimmo & Scudder 1979). Elsewhere reported from Oregon.

L. valhalla Nimmo

In B.C., recorded only from Wapta L. (Nimmo & Scudder 1979). Elsewhere reported from Jasper, Alberta.

** *L. whiteheadi* Nimmo

Endemic to B.C. Recorded from Cowichan L. (Nimmo 1991).

* *Oligophlebodes mostbento* Schmid

In Canada, recorded only from Wauchope Ck., 42.6 km W. of Fauquier (Nimmo & Scudder 1984). Elsewhere reported from Oregon.

Psychoglypha prita (Milne)

In B.C., recorded only from Loop Brook, Glacier Nat. Park (Nimmo & Scudder 1984). Elsewhere reported from Alberta, Idaho and Oregon.

P. rossi Schmid

In B.C., recorded only from Perry Siding (Schmid 1952; Nimmo & Scudder 1979).

** *Psychoglypha* sp.n.

Endemic to B.C. Recorded only from Garibaldi Prov. Park (A.P. Nimmo, in litt.).

* *Rossiana montana* Denning

In Canada, recorded only from Allison Pass in Manning Prov. Park (Nimmo & Scudder 1979). Elsewhere reported from Montana and Washington.

Family Phryganeidae

Agrypnia colorata (Hagen)

In B.C., recorded only from Kamloops (Nimmo & Scudder 1979). Elsewhere reported from Manitoba, Michigan, Quebec and Saskatchewan.

A. macdunnoughi (Milne)

In B.C., recorded only from Kootenay Pond in Kootenay Nat. Park (Nimmo & Scudder 1984). Elsewhere reported from Alberta.

A. obsoleta (Hagen)

In B.C., recorded only from Glacier Nat. Park (Nimmo & Scudder 1984). This is a Holarctic species.

Family Polycentropodidae

Polycentropus denningi Smith

In B.C., recorded only from Diamond Head Trail, 914m, Squamish (Nimmo & Scudder 1984).

P. halidus Milne

In B.C., recorded only from Langford (Nimmo & Scudder 1979). Also reported from the Alaska Panhandle.

P. smithae Denning

In B.C., recorded only from Forbidden Plateau (Nimmo & Scudder 1979). This species is transcontinental.

P. weedi Blickle & Morse

In B.C., recorded only from Terrace (Nimmo & Scudder 1984). This species is transcontinental.

Family Rhyacophilidae

Rhyacophila belona Ross

In B.C., recorded only from Robson (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Idaho and Montana.

* *R. betteni* Ling

In Canada, recorded only from 32 km N. of Golden (Nimmo & Scudder 1979). Elsewhere reported from California and Oregon.

R. chilsia Denning

In B.C., recorded only from Cultus L. (Nimmo & Scudder 1979). Also reported from Alberta and Washington.

R. ebria Denning

In B.C., recorded only from Mt. Revelstoke Nat. Park (Nimmo & Scudder 1979). Elsewhere reported from Montana.

R. glaciera Denning

In B.C., recorded only from Mt. Revelstoke Nat. Park (Nimmo & Scudder 1984). Elsewhere reported from Alberta and Montana.

* *R. insularis* Schmid

In Canada, recorded only from southern Vancouver I. (Koksilah R., Nanaimo, Qualicum Falls) (Nimmo & Scudder 1979). Elsewhere reported from California and Oregon.

* *R. jenniferae* Peck

In Canada, recorded only from Cultus L. (A.P. Nimmo, in litt.). Elsewhere reported from California, Oregon and Washington.

* *R. malkini* Ross

In Canada, recorded only from southern Vancouver I. (Millstone R., Nanaimo, Qualicum R., Wellington) (Nimmo & Scudder 1979). Elsewhere reported from Oregon.

R. milnei Ross

In B.C., recorded only from Loop Brook, Glacier Nat. Park (Nimmo & Scudder 1984). Also reported from Alberta.

** *R. perplana* Ross & Spencer

Endemic to B.C., described from and known only from Cultus L. (Ross & Spencer 1952).

R. rickeri Ross

In B.C., recorded only from 80 km N. of Hazelton (Nimmo & Scudder 1979). Elsewhere reported from Alaska and Alberta

** *R. unimaculata* Denning

Endemic to B.C. Recorded from Fernie and Robson (Denning 1941; Nimmo & Scudder 1979).

R. vemna Milne

In B.C., recorded only from Coldspring camp, Manning Prov. Park (Nimmo & Scudder 1979). Elsewhere reported from Alberta, Idaho, Oregon and Washington.

* *R. visor* Milne

In Canada, recorded only from Cultus L. (Nimmo & Scudder 1979). Elsewhere reported from Oregon and Washington.

Order HYMENOPTERA

An identification guide to the families of Hymenoptera is available (Goulet & Huber (1993), and this work contains other references for identification, many of which are cited in the text below. A catalogue of the Hymenoptera of America north of Mexico was published by Krombein et al. (1979). The parasitic wasps are little known, and so their distribution and rarity cannot be assessed at this time. Hence, only a few parasitic forms and the Aculeates can be reviewed. The following 79 may be rare or endangered, but may not warrant such status on further detailed study.

Order HYMENOPTERA

Suborder SYMPHYTA

Superfamily TENTHREDINOIDEA

Family Tenthredinidae

Subfamily Susaninae

** *Susana fuscala* Wong & Milliron

Endemic to B.C. Described from Dutch Cr. and Invermere. Host is *Juniperus scopulorum* Sarg. (Wong & Milliron 1972).

Subfamily Nematinae

** *Pristiphora hucksena* Wong & Ross

Endemic to B.C. Described from Vancouver (Wong & Ross 1960).

** *Phyllocolpa mariana* (Ross)

Endemic to B.C. Described from Vancouver on *Populus balsamifera* (Ross 1929).

Superfamily ANAXYELOIDEA

Family Anaxyelidae

* *Syntexis libocedrii* Rohwer

In Canada, known only from two specimens from the Salmon Arm area. Eggs are laid in freshly burned incense-cedar, juniper and cedar. Elsewhere known from California and Oregon (Goulet 1992).

Suborder APOCRITA

Division ACULEATA

Superfamily BETHYLOIDEA

Family Bethylidae

Subfamily Bethylinae

Parasierola breviceps (Krombein)

In B.C., known only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from Arizona, California, Colorado, Nebraska, Nevada, New Mexico, Texas, Utah, Mexico (Evans 1978) and Alberta (A.T. Finnamore, in litt.).

Family Chrysididae

Subfamily Cleptinae

Cleptes speciosus Aaron

In B.C., known only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from Montana (Krombein et al. 1979) and Alberta (A.T. Finnamore, in litt.).

Subfamily Elampinae

* *Holopyga hora* Aaron

In Canada, known only from Osoyoos (Haynes Lease) (Scudder 1992). Bohart & Kimsey (1982) give the distribution as west of the 100th meridian, as far north as Oregon and South Dakota, and south to Pueblo and Sinaloa, Mexico.

Subfamily Chrysididinae

Chrysis montana Aaron

Recorded from Mt. Kobau, Osoyoos as possibly new to B.C. (Blades & Maier 1992). Generally distributed, occurring in the Upper Sonoran and Alleghanian life zones across the United States west of the Mississippi R. (Bohart & Kimsey 1982) and reported from Alberta (A.T. Finnamore, in litt.).

C. rivalis Bohart

The only B.C. record is from Vaseux L. (Scudder 1992). The species occurs in the Upper Sonoran and Transition life zones in western United States from Colorado, Wyoming and Montana west to California, Oregon and Washington (Bohart & Kimsey 1982). It is now known to occur in southern Alberta (Writing-on-stone) (A.T. Finnamore, in litt.).

Family Dryinidae

** *Anteon hirtifrons* Whittaker

Endemic to B.C. Described from Hollyburn (Whittaker 1930), and also recorded from Galiano I. (Olmi 1984).

Superfamily VESPOIDEA

Family Tiphidae

* *Paratiphia ephippiata* Allen

In Canada, known only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from Kansas and Wyoming to Texas and Arizona, south to Mexico (Krombein et al. 1979).

Family Sierolomorphidae

Sierolomorpha nigrescens Evans

In B.C., reported from Mt. Kobau (Blades & Maier 1992). Elsewhere known from Yukon, Alberta and Saskatchewan, south to California, Arizona and Colorado (Krombein et al. 1979).

Family Mutillidae

* *Myrmosa bradleyi* Roberts

In Canada, known only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from California and Washington (Krombein et al. 1979).

* *Odontophotopsis erebus* (Melander)

In Canada, recorded only from Osoyoos (Blades & Maier 1992). Elsewhere reported from Arizona, Kansas, New Mexico, Oklahoma, Texas, Utah and Mexico (Krombein et al. 1979).

* *Pseudomethoca athamus* (Fox)

In Canada, recorded only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from California and Oregon (Krombein et al. 1979).

* *P. bequaerti* Mickel

In Canada, recorded only from Mt. Kobau (Blades & Maier 1992). Elsewhere reported from Arizona, Colorado, Montana, New Mexico and Texas (Krombein et al. 1979).

P. propinqua (Cresson)

In B.C., recorded only from Penticton and Osoyoos (Haynes Ecol. Res., and Mt. Kobau) (Blades & Maier 1992; Scudder 1992). Elsewhere reported from Minnesota south to Texas, and west to Alberta and Arizona (Krombein et al. 1979).

* *Dasymutilla chiron* (Blake)

In Canada, recorded from Osoyoos (Haynes Ecol. Reserve) (Blades & Maier 1992), Kaleden, Oliver, Summerland, Vernon and White L. Otherwise reported from Texas (Krombein et al. 1979).

** *D. columbiana* Mickel

Endemic to B.C. Described from Nicola (Mickel 1928).

D. monticola (Cresson)

In B.C., recorded only from the South Okanagan (Oliver, Osoyoos, Penticton) (Scudder 1992). Otherwise reported from Minnesota south to Kansas, and west to B.C. and Arizona (Krombein et al. 1979) and Alberta (A.T. Finnamore, in litt.).

Ephuta grisea Bradley

In B.C., recorded from Mt. Kobau as new to B.C. (Blades & Maier 1992) and Penticton. Elsewhere reported from Alberta, Colorado, Montana, Utah, North Dakota (Krombein et al. 1979).

Family Sapygidae

* *Eusapyga* sp.

Recorded from Mt. Kobau as new to Canada (Blades & Maier 1992), but also reported from Haynes Lease, Osoyoos (Scudder 1992). The genus is reported from California, Nevada, Colorado, Wyoming, Montana, Texas and North Carolina (Krombein et al. 1979).

Family Eumenidae

Euodynerus auranus albivestris (Bohart)

Recorded from Haynes Lease, only B.C. record (Scudder 1992). Elsewhere reported from Alberta, Washington, Idaho, Oregon, North Dakota, South Dakota, Wyoming, Colorado (Krombein et al. 1979).

* *E. cockerelli* (Cresson)

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Reported from Pacific Coast States and Idaho (Krombein et al. 1979).

* *Pterocheilus morrisoni* Cresson

In Canada, recorded only from Osoyoos. Elsewhere reported from Arizona, California, Nevada, Oregon and Utah (Krombein et al. 1979).

Family Pompilidae

* *Ageniella grisea* Townes

In Canada, reported only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere recorded from Idaho (Krombein et al. 1979).

* *A. accepta* (Cresson)

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Reported as transcontinental in Lower Austral zone (Krombein et al. 1979).

* *Allaporus pulchellus* (Banks)

In Canada, recorded from Osoyoos (Haynes Lease) (Scudder 1992) and Penticton. Reported as transcontinental in U.S., Pennsylvania to Oregon (Krombein et al. 1979).

* *Agenioideus birkmanni* (Banks)

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Reported as transcontinental in Lower Austral zone, but entering the Upper Austral

zone in the west; known from Georgia, Kansas, Wyoming and Oregon southward (Krombein et al. 1979).

* *Anoplius depressipes* Banks

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Texas, Alabama and Georgia to Wisconsin and Maine, where it preys on *Dolomedes* along water-courses (Krombein et al. 1979).

* *Aporinellus yucatanensis* (Cameron)

In Canada, known only from Osoyoos (Haynes Lease) and Penticton. Elsewhere reported from New Jersey, Montana and Oregon south to Costa Rica (Krombein et al. 1979).

Superfamily APOIDEA

Series Apoidea: Spheciformes

Family Sphecidae

* *Ammophila aberti* Haldeman

In B.C., restricted to the South Okanagan (Summerland) (Scudder 1992). Elsewhere reported from the Western Provinces and States east to Iowa (Krombein et al. 1979).

* *A. extremitata* Cresson

In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Reported to occur in the western United States (Bohart & Menke 1976).

Podalonia sonorensis (Cameron)

In B.C., recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported from Alberta, United States west of 100th meridian and Mexico (Krombein et al. 1979).

Family Pemphredonidae

Diodontus leguminiferus Cockerell

In B.C., recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Iowa, Missouri, Montana, New York, Utah (Eighme 1989).

* *Ammoplanellus apache* (Pate)

In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported from New Mexico, Arizona and California (Krombein et al. 1979).

* *A. lenape* (Pate)

In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported from California, Montana, and Pennsylvania (Krombein et al. 1979).

Family Crabronidae

* *Ectemnius dilectus* (Cresson)

In B.C., recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported to occur in the transition and Upper Austral zones, in most of the United States except west of Sierra Nevada (Krombein et al. 1979).

Family Larridae

* *Miscophus evansi* (Krombein)

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Otherwise reported from Washington & Wyoming (Bohart & Menke 1976).

Tachysphex apicalis Fox

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992) and Summerland (Pulawski 1988). Transcontinental in U.S., south to New Mexico, B.C. and Alberta (Pulawski 1988).

T. similis Rohwer

In B.C., known only from Osoyoos (Haynes Lease). Elsewhere reported from New Brunswick, Saskatchewan, Alberta, Utah, New Mexico and Mexico (Krombein et al. 1979).

Family Nyssonidae

* *Didineis nodosa* Fox

In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades & Maier 1992). Elsewhere reported from Colorado, Utah, Idaho, Washington, Oregon, California and Mexico (Krombein et al. 1979).

* *Microbembex californica* R. Bohart

In Canada, restricted to the South Okanagan (Kaleden, Oliver, Osoyoos (Haynes Lease), Penticton) (Scudder 1992). United States and northern Mexico west of divide (Bohart & Menke 1976).

* *Stictiella tuberculata* (Fox)

In Canada, recorded only from Osoyoos. Elsewhere reported from Idaho, Nevada and Washington (Krombein et al. 1979).

* *Synnevrus* sp.

In Canada, known only from Keremeos.

Family Philanthidae

* *Eucerceris vittatifrons* Cresson

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Washington, California, Nevada, Utah, Colorado, Arizona, New Mexico, Oregon and Idaho (Krombein et al. 1979).

Series APOIDEA: Apiformes

Family Andrenidae²** *Andrena advarians* Viereck

Endemic to B.C. Described from Vancouver (Viereck 1904).

** *A. bella* Viereck

Endemic to B.C. Described from Chilcotin (Viereck 1924).

** *A. buckelli* Viereck

Endemic to B.C. Described from Kaleden, Lillooet, Lytton, North Bend, Okanagan Falls, Penticton, Salmon Arm, Thompson R. (Viereck 1924).

** *A. excellens* Viereck

Endemic to B.C. Described from Vancouver (Viereck 1924).

** *A. fulvicrista* Viereck

Endemic to B.C. Described from Agassiz, Chilcotin and Penticton (Viereck 1924).

** *A. lillooetensis* Viereck

Endemic to B.C. Described from Lillooet (Viereck 1924).

** *A. lummiorum* Viereck

Endemic to B.C. Described from Vancouver (Viereck 1916).

** *A. magnifica* Viereck

Endemic to B.C. Described from Rock Cr. (Viereck 1924).

** *A. revelstokensis* Viereck

Endemic to B.C. Described from Mt. Revelstoke, el. 2438m (Viereck 1924).

** *A. singularis* Viereck

Endemic to B.C. Described from Goldstream and Invermere (Viereck 1924).

* *A. trizonata* (Ashmead)

In Canada, known only from Fairview (Oliver) (Scudder 1992). Elsewhere reported from Colorado (Krombein et al. 1979).

** *A. variantia* Linsley

Endemic to B.C. Described from Chilcotin as *A. varia* (Viereck 1924).

Family Halictidae

* *Dialictus albohirtus* (Crawford)

In Canada, known only from Penticton (Scudder 1992). Elsewhere recorded from Nevada (Krombein et al. 1979).

Family Megachilidae

* *Anthidium palliventris* Cresson

In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Oregon and Utah (Krombein et al. 1979).

** *Stelis maculata* (Provancher)

Endemic to B.C. Described from Vancouver (Provancher 1888).

S. montana Cresson

In B.C., known only from Oliver (Scudder 1992). Elsewhere reported from Alberta, Arizona, Colorado, Oregon, Utah and Wyoming (Krombein et al. 1979).

** *S. ricardonis* (Cockerell)

Endemic to B.C. Described from Vernon (Cockerell 1912).

* *Heriades cressoni* Michener

In B.C., recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Nebraska to New Mexico, west to B.C. and California (Krombein et al. 1979).

* *Hoplitis sambuci* Titus

In Canada, recorded only from Keremeos and Oliver (Scudder 1992). Otherwise reported from B.C. to California, Nevada and Utah (Krombein et al. 1979).

* *Anthocopa copelandica* Cockerell

In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Idaho, Montana, Oregon, Utah, Washington and Wyoming (Krombein et al. 1979).

* *Osmia nemoralis* Sandhouse

In Canada, known only from Fairview (Oliver) and Vaseux L. (Scudder 1992). Elsewhere reported from Idaho and Montana, south to California and Utah (Krombein et al. 1979).

* *O. pikei* Cockerell

In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Nevada, Oregon, Washington and Wyoming (Krombein et al. 1979).

O. texana Cresson

In B.C., known only from Oliver (Scudder 1992). Elsewhere reported from New York, Michigan, Ohio, Nebraska, Texas, Alberta and North Dakota south to New Mexico (Krombein et al. 1979).

* *O. unca* Michener

In Canada, known only from Osoyoos (Scudder 1992). Elsewhere reported from Colorado, Idaho, Montana, Oregon, Utah and Washington (Krombein et al. 1979).

* *Megachile gentilis* Cresson

In Canada, known only from Okanagan Falls (Scudder 1992). Elsewhere reported from Texas to California, Nevada, Oregon, Idaho and Hawaii (introduced) (Krombein et al 1979).

* *M. subnigra subnigra* Cresson

In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming (Krombein et al 1979).

* *Chalicodoma (Chelostomoides) angelarum* (Cockerell)

In Canada, known only from Osoyoos (Haynes Lease) and Penticton (Scudder 1992). Elsewhere reported from Arizona, California, Nevada, Oregon and Washington (Krombein et al 1979).

Family Apidae

** *Nomada vernonensis* Cockerell

Endemic to B.C. Described from Vernon (Cockerell 1916a).

** *Epeolus tristicolor* Viereck

Endemic to B.C. Described from Vancouver (Viereck 1905).

** *Synhalonia hirsutissima* (Cockerell)

Endemic to B.C. (Cockerell 1916b), with no precise locality.

** *Anthophora furcata neofurcata* (Sladen)

Subspecies endemic to B.C. Described from Agassiz, Shawnigan L. and Victoria (Sladen 1919).

Bombus griseocollis (DeGeer)

In B.C., known only from the Okanagan (Blades & Maier 1992). Occurs generally throughout the United States and southern Canada.

* *B. vosnesenskii* Radoszkowski

In Canada, known only from Osoyoos (Scudder 1992). Reported from B.C. south to California, Nevada and Mexico (Krombein et al 1979).

Table 1

Numerical summary of the potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia.

| TAXA | NO. OF SPECIES/SSP. ENDEMIC TO BC | NO. OF SPECIES OCCURRING IN BC ONLY IN CANADA AND RARE | NO. OF SPECIES RARE IN BC BUT OCCURRING ELSEWHERE IN CANADA | TOTAL |
|-----------------------|-----------------------------------|--|---|-------|
| Phylum MOLLUSCA | 1 | 10 | 3 | 14 |
| Phylum ANNELIDA | | | | |
| Class HIRUDINOIDEA | — | 1 | 4 | 5 |
| Class OLIGOCHAETA | 1 | 3 | — | 4 |
| Phylum TARDIGRADA | 3 | — | — | 3 |
| Phylum ARTHROPODA | | | | |
| Subphylum CHELICERATA | | | | |
| Class ARACHNIDA | | | | |
| Order SOLPUGIDA | 3 | 3 | — | 6 |
| SCORPIONIDA | — | — | 1 | 1 |
| ARANEAE | 3 | 64 | 44 | 111 |
| ACARIFORMES | 7 | 11 | 1 | 19 |
| Subphylum CRUSTACEA | 3 | 6 | — | 9 |
| Subphylum MYRIAPODA | | | | |
| Order DIPLOPODA | 5 | 5 | — | 10 |
| CHILOPODA | 1 | — | — | 1 |
| PAUROPODA | 3 | 4 | — | 7 |
| Subphylum HEXAPODA | | | | |
| Class PROTURA | 3 | — | — | 3 |
| Class COLLEMBOLA | 9 | 1 | — | 10 |
| Class DIPLURA | — | 1 | — | 1 |
| Class INSECTA | | | | |
| Order MICROCORYPHIA | 1 | 1 | — | 2 |
| EPHEMEROPTERA | — | — | 4 | 4 |
| ODONATA | 1 | 5 | 12 | 18 |
| PLECOPTERA | 3 | 8 | 14 | 25 |
| DICTYOPTERA | — | 1 | — | 1 |
| NOTOPTERA | 3 | — | — | 3 |
| GRYLLOPTERA | — | 4 | 1 | 5 |
| ORTHOPTERA | 1 | 4 | 2 | 7 |
| HETEROPTERA | 11 | 56 | 7 | 74 |
| HOMOPTERA | 17 | 27 | 4 | 48 |
| MEGALOPTERA | — | 1 | 3 | 4 |
| RAPHIDIOPTERA | — | 2 | — | 2 |
| NEUROPTERA | 1 | 8 | 5 | 14 |
| COLEOPTERA | 30 | 81 | 3 | 114 |
| MECOPTERA | — | 2 | 1 | 3 |
| DIPTERA | 24 | 37 | 15 | 76 |
| LEPIDOPTERA | 8 | 30 | 24 | 62 |
| TRICHOPTERA | 4 | 31 | 39 | 74 |
| HYMENOPTERA | 22 | 41 | 16 | 79 |
| | 168 | 448 | 203 | 819 |

ACKNOWLEDGMENTS

Assistance to produce this paper was provided by the Government of British Columbia's Corporate Resources Inventory Initiative (CRII). CRII is a multi-ministry initiative to integrate and improve provincial resources inventories in support of land use allocation processes, socio-economic mitigation strategies and integrated resources management. I wish to thank the B.C. Ministry of Forests for providing the funds to publish this manuscript. In addition, a special word of thanks to Evelyn Hamilton, B.C. Ministry of Forests, who helped facilitate the process, and to Trudy Chatwin, B.C. Ministry of Environment, Lands and Parks, who co-ordinated the whole project.

I am indebted to the following experts for assistance: R.S. Anderson (Canadian Museum of Nature, Ottawa), U. Aspöck (Naturhistorisches Museum, Vienna, Austria), G.E. Ball (University of Alberta, Edmonton), V. Behan-Pelletier (Agriculture Canada, Ottawa), P.F. Bellinger (California State University, Northridge), E.L. Bousfield (Royal B.C. Museum, Victoria), D.E. Bright (Agriculture Canada, Ottawa), R.O. Brinkhurst (Aquatic Resources Center, Franklin, TN), D.J. Buckle (Saskatoon), G.W. Byers (University of Kansas, Lawrence), J.M. Campbell (Agriculture Canada, Ottawa), R.A. Cannings (Royal B.C. Museum, Victoria), S.G. Cannings (B.C. Conservation Data Centre, Victoria), R. Chengalath (Canadian Museum of Nature, Ottawa), K. Christiansen (Grinnell College, Grinnell, IA), A.H. Clarke (Ecoresearch Inc., Portland, TX), D.C. Currie (Royal Ontario Museum, Toronto), A. Davies (Agriculture Canada, Ottawa), R.W. Davies (University of Calgary), A.T. Finnamore (Provincial Museum of Alberta, Edmonton), A. Fjellberg (Tromsø University, Norway), R. Footitt, J.A. Garland, H. Goulet (Agriculture Canada, Ottawa), G. Green (Royal B.C. Museum, Victoria), G.C.D. Griffiths (University of Alberta, Edmonton), C.S. Guppy (Ministry of Environment, Lands & Parks, Quesnel, B.C.), K.G.A. Hamilton (Agriculture Canada, Ottawa), B.S. Heming (University of Alberta, Edmonton), H.H. Hobbs, Jr. (Smithsonian Institution, Washington), R. Holmberg (Athabasca University), J.R. Holsinger (Old Dominion University, Norfolk, VA), A. Howden, H.F. Howden (Carleton University, Ottawa), D.H. Kavanaugh (California Academy of Sciences, San Francisco), J. Klimaszewski (Transvaal Museum, Pretoria), J.D. Lafontaine (Agriculture Canada, Ottawa), P. Lambert (Royal B.C. Museum, Victoria), D.J. Larsen (Memorial University, St. John's), V.G. Marshall (Pacific Forestry Centre, Victoria), M. Meinander (University of Helsinki), E.L. Mockford (Illinois State University, Normal), W.B. Muchmore (University of Rochester), A.P. Nimmo (University of Alberta, Edmonton), J. O'Hara, D.R. Oliver (Agriculture Canada, Ottawa), S.B. Peck (Carleton University, Ottawa), F. Rafi (Canadian Museum of Nature, Ottawa), J.H. Redner (Agriculture Canada, Ottawa), H.M. Reiswig (McGill University, Montreal), J.W. Reynolds (Sir Sandford Fleming College, Lindsay, ON), W.E. Ricker (Nanaimo, B.C.), M. Schwartz, M. Sharkey (Agriculture Canada, Ottawa), R.M. Shelley (North Carolina State Museum of Natural Science, Raleigh), J.H. Shepard (Nelson, B.C.), A. Smetana, I.M. Smith (Agriculture Canada, Ottawa), H. Sturm (Universität Hildesheim, Germany), C.A. Tauber (Cornell University, Ithaca), D.W. Taylor (Eugene, OR), V.R. Vickery (McGill University, Ste-Anne-de-Bellevue, PQ), J.R. Vockeroth (Agriculture Canada, Ottawa), R. West (Victoria, B.C.), S.W. Wilson (Central Missouri State University, Warrensburg, MO), D.M. Wood (Agriculture Canada, Ottawa). However, none of these are responsible for any errors or omissions.

Finally, this paper would not have been completed without the expert assistance of Launi Lucas. I thank her for her patience and help through the many revisions.

NOTES

1. These records may refer to the same species, but the correct identification is not clear (R.G. Holmberg, pers. comm.).
2. Note: all species of *Andrena* which still appear to be endemic to B.C. belong to the subgenus *Andrena* for which no revisions have ever been published. It is expected that few or no B.C. endemics will survive in the subgenus.

REFERENCES

- Abbott, R. T. & Boss, K. J. (ed.) 1989. A classification of the Living Mollusca. American Malacologists Inc. Melbourne, Florida, 195 p.
- Adams, P. A. & Garland, J. A. 1982. A review of the genus *Mallada* in the United States and Canada, with a new species (Neuroptera: Chrysopidae). *Psyche* 89: 239-248.
- Alexander, C. P. 1927a. New nearctic crane-flies (Tipulidae, Diptera). Part XII. *Can. Entomol.* 59: 184-193.
- Alexander, C. P. 1927b. Undescribed crane flies from the Holarctic region in the United States National Museum. *Proc. U.S. Natl. Mus.* 72(2): 1-17.
- Alexander, C. P. 1931. New or insufficiently-known crane flies from the Nearctic region (Tipulidae, Diptera). Part III. *Bull. Brooklyn Entomol. Soc.* 26: 177-184.
- Alexander, C. P. 1955. Undescribed species of crane-flies from the western United States and Canada (Dipt.: Tipulidae). Part XV. *Entomol. News* 66: 125-132.
- Anderson, R. S. 1988. Systematics, phylogeny and biogeography of New World weevils traditionally of the tribe Cleonini (Coleoptera: Curculionidae; Cleoninae). *Quaest. Entomol.* 23(1987): 431-709.
- Anderson, R. S. & Peck, S. B. 1985. The Carrion Beetles of Canada and Alaska. Coleoptera: Silphidae and Agyrtidae. The Insects and Arachnids of Canada. Part 13. *Agric. Can. Publ.* 1778: 121 pp.
- Andre, H. M. 1980. A generic revision of the family Tydeidae (Acari: Actinedida). IV. Generic descriptions, keys and conclusions. *Bull. Ann. Soc. Entomol. Belg.* 116: 103-168.
- Anon [1992]. Biodiversity in British Columbia. Ministry of Environment, Lands & Parks, Ministry of Forests, Victoria, 6 pp.
- Arnett, Jr., R. A. (ed.) 1983a. Checklist of the Beetles of North and Central America and the West Indies. *Flora and Fauna Publ.*, Gainesville, FL.
- Arnett, Jr., R. A., 1983b, Family 119. Oedemeridae, The False Blister Beetles (in) Arnett, Jr., R. A. (ed.) Checklist of the Beetles of North and Central America and The West Indies. *Flora & Fauna Publ.*, Gainesville, FL, 6 pp.
- Arnett, Jr., R. H. 1985. American Insects. A handbook of the insects of America north of Mexico. van Nostrand Reinhold Co., New York, 850 pp.
- Ashlock, P. D. 1958. A revision of the genus *Malezonotus* (Hemiptera-Heteroptera: Lygaeidae). *Ann. Entomol. Soc. Am.* 51: 199-208.
- Aspöck, U. 1974. Die Raphidiopteren der Nearktis (Insecta, Neuropteroidea). Unpubl. Doctoral Diss. Univ. Wien, 2 vols.
- Aspöck, U. 1975. The present state of knowledge on the Raphidioptera of America (Insecta: Neuropteroidea). *Polskie Pismo ent. (Bull. Entomol. Polon.)* 45: 537-546.
- Asquith, A. 1991. Revision of the genus *Lopidea* in America north of Mexico (Heteroptera: Miridae: Orthotylinae). *Theses Zoologicae Vol. 16*. Koeltz Sci. Books, Koenigstein.
- Asquith, A. & Lattin, J. D. 1991. *Omanonabis*: a new genus of Nabidae (Heteroptera) from western North America, with a review of *Nabis edax* Blatchley. *Pan-Pac. Entomol.* 67: 7-19.
- Attems, C. 1947. Neue Geophilomorpha des Wiener Museums. *Ann. Naturhist. Mus. Wien* 50:50-149.
- Bailey, S. F. 1951. The genus *Aeolothrips* Haliday in North America *Hilgardia* 21(2): 43-80.
- Bailey, S. F. 1957. The thrips of California. Part 1: Suborder Terebrantia. *Bull. Calif. Ins. Surv.* 4(5): 139-220.
- Bailey, S. F. & Cott, H. E. 1954. A review of the genus *Heterothrips* Hood (Thysanoptera: Heterothripidae) in North America, with descriptions of two new species. *Ann. Entomol. Soc. Am.* 47: 614-635.
- Ball, I. R. & Sluys, R. 1990. Turbellaria: Tricladida: Terricola, pp. 137-153 (in) Dindal, D. L. (ed.) *Soil Biology Guide*. John Wiley & Sons, New York.
- Balogh, J. & Balogh, P. 1992. The Oribatid Mites Genera of the World. Hungarian National Museum Press, Budapest. Vol. 1, 263 pp, Vol. 2, 375 pp.
- Barr, D. W. 1977. A new water mite genus from western Canada (Acari: Parasitengona: Anisitsiellidae). *Can. J. Zool.* 55: 877-881.
- Baumann, R. W., Gaufin, A. R. & Surdick, R. F. 1977. The stoneflies (Plecoptera) of the Rocky Mountains. *Mem. Am. Entomol. Soc.* 31: 1-208.
- Behan-Pelletier, V. M. 1989. Description of *Scapuleremaeus kobauensis* gen. nov., sp. nov. (Acari: Oribatida: Cymbaeremaeidae) from western Canada. *Can. Entomol.* 121: 507-513.
- Behan-Pelletier, V. M. 1993a. Diversity of soil arthropods in Canada: systematic and ecological problems. *Mem. Entomol. Soc. Can.* 165: 11-50.
- Behan-Pelletier, V. M. 1993b. Eremaeidae (Acari: Oribatida) of North America. *Mem. Entomol. Soc. Can.* 168. 193 pp.
- Beime, B. P. 1956. Leafhoppers (Homoptera: Cicadellidae) of Canada and Alaska. *Can. Entomol.* 88, Suppl. 2: 1-180.
- Beime, B. P. 1961. The cicadas (Homoptera: Cicadidae) and treehoppers (Homoptera: Membracidae) of Canada. *Res. Branch, Agric. Canada, Ottawa*.
- Belton, P. & Belton, E. M. 1981. A revised list of the mosquitoes of British Columbia. *J. Entomol. Soc. Brit. Columbia* 78: 55-61.
- Blackwelder, R. E. 1973. Family 27. Staphylinidae (in) Arnett, Jr., R. A. (ed.) Checklist of the Beetles of North and Central America and The West Indies. *Flora & Fauna Publ.*, Gainesville, FL, 167 pp.
- Blades, D. C. A. & Maier, C. W. 1992. A survey of grassland and montane arthropods collected in the Osoyoos region of British Columbia. *SOCAP Report*: 36 pp.

- Bohart, R. M. & Kimsey, L. S. 1982. A synopsis of the Chrysididae in America north of Mexico. *Mem. Am. Entomol. Inst.* 33: 1-266.
- Bohart, R. M. & Menke, A. S. 1976. *Specid wasps of the world*. Univ. Calif. Press, Berkeley, 645 pp.
- Bolte, K. B. 1990. Guide to the Geometridae of Canada (Lepidoptera). VI. Subfamily Larentiinae. I. Revision of the genus *Eupithecia*. *Mem. Entomol. Soc. Can.* 151: 253 pp.
- Borkent, A. 1992. *Parasimulium* (Diptera: Simuliidae), a black fly genus new to the extant fauna of Canada. *Can. Entomol.* 124: 743-744.
- Bousfield, E. L. 1958. Fresh-water Amphipod Crustaceans of glaciated North America. *Can. Field Nat.* 72: 55-113.
- Bousfield, E. L. 1979. The amphipod superfamily Gammaroidae in the northeastern Pacific region: systematics and distributional ecology. *Bull. Biol. Soc. Wash.* 3: 297-357.
- Bousfield, E. L. & Morino, H. 1992. The amphipod genus *Ramellogammarus* in fresh waters of Western North America: systematics and distributional ecology. *R. Brit. Columbia Mus. Contr. Nat. Sci.* 17: 1-22.
- Bousquet, Y. 1991. Checklist of Beetles of Canada and Alaska. *Agric. Can. Publ.* 1861/E: 430 pp.
- Boyd, H. P. & Associates. 1982. Checklist of Cicindelidae. The Tiger Beetles. Plexus Publ. Inc., Marlton, NJ, 31 pp.
- Bright, D. E. & Skidmore, R. E. 1991. Two new records of Scolytidae (Coleoptera) from Canada. *Coleopt. Bull.* 45: 368.
- Bright, Jr. D. E. 1976. The Bark Beetles of Canada and Alaska. Coleoptera: Scolytidae. The Insects and Arachnids of Canada. Part 2. *Agric. Can. Publ.* 1576: 241 pp.
- Bright, Jr. D. E. 1987. The Metallic Wood-boring Beetles of Canada and Alaska. Coleoptera: Buprestidae. The Insects and Arachnids of Canada. Part 15. *Agric. Can. Publ.* 1810: 335 pp.
- Brinkhurst, R. O. & Gelder, S. R. 1991. Annelida: Oligochaeta and Branchiobdellida, pp. 401-435 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Brown, K. M. 1991. Mollusca: Gastropoda, pp. 285-314 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Brown, W. J. 1931. New species of Coleoptera (II). *Can. Entomol.* 63: 115-122.
- Brown, W. J. 1966. Chrysomelidae and Curculionidae (Coleoptera); descriptions and notes. *Can. Entomol.* 98: 855-859.
- Burch, J. B. 1975. Freshwater Unionacean Clams (Mollusca: Pelecypoda) of North America. *US Env. Prot. Agency Ident. Manual* #11: 204 pp.
- Burch, J. B. 1982. Freshwater snails (Mollusca: Gastropoda) of North America. *EPA* 600/3-82-026: 294 pp.
- Burch, J. B. 1989. North American Freshwater Snails. *Malacological Publ.*, Hamburg, Mich. 365 pp.
- Burch, J. B. & Pearce, T. A. 1990. Terrestrial Gastropoda, pp. 201-309 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Byers, G. W. 1983. The crane fly genus *Chionea* in North America. *Univ. Kans. Sci. Bull.* 52(6): 59-195.
- Campbell, J. M. 1968. A revision of the new world Micropeplinae (Coleoptera: Staphylinidae) with a rearrangement of the world species. *Can. Entomol.* 100: 225-267.
- Campbell, J. M. 1973a. New species and records of New World Micropeplinae (Coleoptera: Staphylinidae). *Can. Entomol.* 105: 569-576.
- Campbell, J. M. 1973b. A revision of the genus *Tachinus* (Coleoptera: Staphylinidae) of North and Central America. *Mem. Entomol. Soc. Can.* 90: 137 pp.
- Campbell, J. M. 1978. A revision of the North American Omaliinae (Coleoptera: Staphylinidae). I. The genera *Haida* Keen, *Pseudohaida* Hatch, and *Eudectoides* new genus. 2. The tribe Coryphiini. *Mem. Entomol. Soc. Can.* 106: 87 pp.
- Campbell, J. M. 1979. A revision of the genus *Tachyporus* Gravenhorst (Coleoptera: Staphylinidae) of North and Central America. *Mem. Entomol. Soc. Can.* 109: 95 pp.
- Campbell, J. M. 1993. A revision of the genera *Bryoporus* Kraatz and *Bryophacis* Reitter and two new related genera from America north of Mexico (Coleoptera: Staphylinidae: Tachyporinae). *Mem. Entomol. Soc. Can.* 166: 85 pp.
- Campbell, J. M. & Winchester, N. N. 1993. First record of *Pseudohaida rothi* Hatch (Coleoptera: Staphylinidae: Omaliinae) from Canada. *J. Entomol. Soc. Brit. Columbia* 90: 83.
- Canadian Permanent Committee on Geographical Names. 1985. British Columbia. 3rd edition. *Gazetteer of Canada Series*. Geological Services Division, Surveys and Mapping Branch, Department of Energy, Mines and Resources Canada, Ottawa.
- Cannings, R. 1981. New find in Okanagan nettles. *Boreus* 1 (2): 9.
- Cannings, R. A. 1978. The distribution of *Tanypteryx hageni* (Odonata: Petaluridae) in British Columbia. *J. Entomol. Soc. Brit. Columbia* 75: 18-19.
- Cannings, R. A. 1983. *Libellula subornata* (Odonata: Libellulidae) in Canada. *J. Entomol. Soc. Brit. Columbia* 80: 54-55.
- Cannings, R. A. 1987. The ground mantid *Litaneutria minor* (Dictyoptera: Mantidae) in British Columbia. *J. Entomol. Soc. Brit. Columbia* 84: 64-65.
- Cannings, R. A. 1989. The robber flies (Diptera: Asilidae) of a *Festuca* grassland in the Okanagan Valley, British Columbia. *J. Entomol. Soc. Brit. Columbia* 86: 14-26.
- Cannings, R. A. & Cannings, S. G. 1994. Terrestrial arthropods (in) Hebda, R. J. & Haggarty, J. C. (Eds.) *The Brooks Peninsula: an ice-age refuge in British Columbia*. Royal B.C. Museum, Victoria (in press).
- Cannings, R. A. & Guppy, C. S. 1989. Glover's silkmoth, *Hyalophora gloveri* (Strecker) (Lepidoptera: Saturniidae), new to British Columbia. *J. Entomol. Soc. Brit. Columbia* 86: 89-90.
- Cannings, R. A. & Stuart, K. M. 1977. The Dragonflies of British Columbia. *Brit. Columbia Prov. Mus. Handbook* 35: 254 pp.

- Cannings, S. 1990a. Endangered invertebrates in B.C. *BioLine* 9(2): 15-17.
- Cannings, S. 1990b. Discovery of *Somatochlora cingulata* (Selys) in Bowron L. Provincial Park, B.C., *Walleria* 5:5.
- Cannings, S. G. 1987. *Chionea macnabeana* Alexander, a micropterous crane fly (Diptera: Tipulidae) new to Canada. *J. Entomol. Soc. Brit. Columbia* 84: 50-51.
- Cannings, S. G. 1989. New records of slender winter stoneflies (Plecoptera: Capniidae) in British Columbia. *J. Entomol. Soc. Brit. Columbia* 86: 77-80.
- Carpenter, F. M. 1940. A revision of the Nearctic Hemerobiidae, Berothidae, Sisyridae, Polystoechotidae and Dilaridae (Neuroptera). *Proc. Am. Acad. Arts & Sci.* 74: 193-280.
- Carpenter, P. P. 1864. Supplementary report on the present state of our knowledge with regard to the Mollusca of the west coast of North America. *British Association for the Advancement of Science Report 1863*: 517-686.
- Carpenter, S. J. & LaCasse, W. J. 1955. Mosquitoes of North America (North of Mexico). Univ. Calif. Press, Berkeley & Los Angeles.
- Chamberlin, R. V. 1919. A new *Parajulus* from British Columbia. *Can. Entomol.* 51: 119-120.
- Chamberlin, R. V. 1920. Canadian myriapods collected in 1882-83 by J. B. Tyrell, with additional records. *Can. Entomol.* 52: 166-168.
- Chamberlin, R. V. 1951. Eleven new western millipedes. *Chicago Acad. Sci. Nat. Hist. Mus.* 87: 1-12.
- Chamberlin, R. V. & Hoffman, R. L. 1958. Checklist of the millipeds of North America. *Bull. U.S. Natl. Mus.* 212. 236 pp.
- Charles, W. D. 1981. "Spidering" - a retirement hobby. *Boreus*. 1(1): 5-6.
- Chengalath, R. 1984. Synopsis Speciorum. Rotifera. *Bibliographia Invertebratorum Aquaticorum Canadensium* 3: 102 pp.
- Chiasson, H. 1986. A synopsis of the Thysanoptera (thrips) of Canada. *Mem. Lyman Entomol. Mus. & Res. Lab.* 17: 153 pp.
- Chiykowski, L. N. & Hamilton, K. G. A. 1985. *Elymana sulphurella* (Zetterstedt): biology, taxonomy, and relatives in North America (Rhynchotha: Homoptera: Cicadellidae). *Can. Entomol.* 117: 1545-1558.
- Chopra, N. P. 1968. A revision of the genus *Arhyssus* Stål. *Ann. Entomol. Soc. Am.* 61: 629-655.
- Christiansen, K. & Bellinger, P. 1980-1981. The Collembola of North America north of the Rio Grande. A taxonomic analysis. 4 parts. Grinnell College, Grinnell, Iowa.
- Clarke, A. H. (ed.) 1970. Papers on the Rare and Endangered Mollusks of North America. *Symposium Proceedings. Malacologia* 10(1).
- Clarke, A. H. 1976. Endangered freshwater Mollusks of northwestern North America. *Bull. Am. Malacol. Union Inc.* 1976: 18-19.
- Clarke, A. H. 1981. The Freshwater Molluscs of Canada. *Nat. Mus. Nat. Sci. Ottawa*.
- Clemens, W. A., Rawson, D. S. & McHugh, J. L. 1939. A biological survey of Okanagan Lake, British Columbia. *Bull. Fish. Res. Board Can.* 56: 1-70.
- Clifford, H. F. 1991. Aquatic invertebrates of Alberta. University of Alberta Press, Edmonton, 538 pp.
- Cockerell, T. D. A. 1912. Two bees new to Canada. *Can. Entomol.* 44: 293.
- Cockerell, T. D. A. 1916a. Some bees in the British Museum. *Can. Entomol.* 48: 272-274.
- Cockerell, T. D. A. 1916b. Descriptions and records of bees. *LXII. Ann. Mag. Nat. Hist.* (8)17: 428-435.
- Cole, F. R. 1969. The Flies of Western North America. Univ. Calif. Press, Berkeley.
- Copeland, T. P. & Imadaté, G. 1990. Insecta: Protura, pp. 911-933 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Costello, R. A. 1977. The first record of *Culiseta silvestris minnesotae* Barr in British Columbia (Diptera: Culicidae). *J. Entomol. Soc. Brit. Columbia* 74: 9.
- Cott, H. E. 1956. Systematics of the suborder Tubulifera (Thysanoptera) in California. *Univ. Calif. Publ. Entomol.* 13: 1-216.
- Courtney, G. W. 1990. Revision of Nearctic mountain ridges (Diptera: Deuterophlebiidae). *J. Nat. Hist.* 24: 81-118.
- Crawford, C. S. 1990. Scorpiones, Solifugae, and associated desert taxa, pp. 421-475 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Cutler, B. 1987. A revision of the American species of the antlike jumping spider genus *Synageles* (Araneae, Salticidae). *J. Arachnol.* 15: 321-348.
- Darsie, Jr., R. F. & Ward, R. A. 1981. Identification and geographical distribution of the mosquitoes of North America, north of Mexico. *Mosquito Syst. Suppl.* 1: 313 pp.
- Dash, M. C. 1990. Oligochaeta: Enchytraeidae, pp. 311-340 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Davies, R. W. 1971. A key to the freshwater Hirudinoidea of Canada. *J. Fish. Res. Bd. Canada* 28: 543-552.
- Davies, R. W. 1973. The geographic distribution of freshwater Hirudinoidea in Canada. *Can. J. Zool.* 51: 531-545.
- Davies, R. W. 1991. Annelida: Leeches, Polychaetes, and Acanthobdellids, pp. 437-479 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press, San Diego.
- Delorme, L. D. 1991. Ostracoda, pp. 691-772 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Demarchi, D. A., Marsh, R. D., Harcombe, A. P. & Lea, E. C. 1990. Environment, pp. 55-144 (in) Campbell, R. W., Dawe, N. K., McTaggart-Cowan, I., Cooper, J. M., Kaiser, G. W. & McNall, M. C. E. *The Birds of British Columbia. Volume 1. Non-passerines. Introduction and Loons through Waterfowl*. Royal B.C. Museum, Victoria, B.C.

- Denning, D. G. 1941. Descriptions and notes of new and little known species of Trichoptera. *Ann. Entomol. Soc. Am.* 34: 195-203.
- Dodson, S. I. & Frey, D. G. 1991. Cladocera and other Branchiopoda, pp. 723-786 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Dolling, W. R. & Yonke, T. R. 1976. The genus *Coriomeris* in North America. *Ann. Entomol. Soc. Am.* 69: 1147-1152.
- Dondale, C. D. 1990. Litter Araneae (Araneida), pp. 477-502 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Dondale, C. D. & Redner, J. H. 1978. The crab spiders of Canada and Alaska. Araneae: Philodromidae and Thomisidae. *The Insects and Arachnids of Canada. Part 5. Agric. Can. Publ.* 1663: 255 pp.
- Dondale, C. D. & Redner, J. H. 1982. The sac spiders of Canada and Alaska. Araneae: Clubionidae and Anyphaenidae. *The Insects and Arachnids of Canada. Part 9. Agric. Can. Publ.* 1724: 194 pp.
- Dondale, C. D. & Redner, J. H. 1990. The wolf spiders, nurseryweb spiders, and Lynx spiders of Canada and Alaska. Araneae: Lycosidae, Pisauridae, and Oxyopidae. *Agric. Can. Publ.* 1856: 383 pp.
- Domfeld, E. J. 1980. *The Butterflies of Oregon*. Timber Press, Forest Grove, OR.
- Downes, W. 1924. New records of Hemiptera from British Columbia. *Proc. Entomol. Soc. Brit. Columbia* 21: 27-33.
- Downes, W. 1927. A preliminary list of the Heteroptera and Homoptera of British Columbia. *Proc. Entomol. Soc. Brit. Columbia* 23: 1-22.
- Downes, W. 1935. Additions to the list of B.C. Hemiptera. *Proc. Entomol. Soc. Brit. Columbia* 31: 46-48.
- Drake, R. J. 1962. The history of nonmarine Malacology in B.C. *Nat. Mus. Can. Bull.* 185: 1-16.
- Edgar, A. L. 1990. Opiliones (Phalangida), pp. 529-581 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Edmondson, W. T. 1959. Rotifers, pp. 420-494 (in) Edmondson, W. T. (ed.) *Fresh-water Biology*, 2nd Edition. Wiley, New York.
- Edmunds, Jr., G. F. & Allen, R. K. 1957. A checklist of the Ephemeroptera of North America north of Mexico. *Ann. Entomol. Soc. Am.* 50: 317-324.
- Edmunds, Jr., G. F., Jensen, S. L. & Berner, L. 1976. *The Mayflies of North and Central America*. Univ. Minnesota Press, Minneapolis.
- Eighme, L. E. 1989. Revision of *Diodontus* (Hymenoptera: Sphecidae) in America north of Mexico. *Ann. Entomol. Soc. Am.* 82: 14-28.
- Emerton, J. H. 1923. New spiders from Canada and the adjoining states, No. 3. *Can. Entomol.* 55: 238-243.
- Erwin, T., Whitehead, D. R. & Ball, G. E. 1977. Family 4. Carabidae, The Ground Beetles, (in) Arnett, Jr., R. A. (ed.) *Checklist of the Beetles of North and Central America and the West Indies*. Flora & Fauna Publ., Gainesville, FL, 68 pp.
- Evans, H. E. 1978. The Bethyilidae of America north of Mexico. *Mem. Am. Entomol. Inst.* 27: 332 pp.
- Fall, H. C. 1934. A review of the North American species of *Agathidium* (Coleoptera: Silphidae). *Entomol. Am.* 14: 99-131.
- Fender, W. M. & McKey-Fender, D. 1990. Oligochaeta: Megascolecidae and other earthworms from western North America, pp. 357-586 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Ferguson, D. C. 1987. *Xanthorhoe clarkeata* (Geometridae), a new species and possible endemic of the Queen Charlotte Islands, British Columbia. *J. Lepid. Soc.* 41: 98-103.
- Ferguson, L. M. 1990a. Insecta: Microcoryphia and Thysanura, pp. 935-949 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Ferguson, L. M. 1990b. Insecta: Diplura, pp. 951-963 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Fischer, F. C. J. 1960-1973. *Trichopterorum Catalogus*. Vols. 1-15. Nederlandsche Entomologische Vereeniging, Amsterdam.
- Fjellberg, A. 1986. Revision of the genus *Agrenia*. Bömer, 1906 (Collembola: Isotomidae). *Entomol. Scand.* 17: 93-106.
- Fjellberg, A. 1992. *Hypogastrura (Mucrella) arborea* sp. nov., a tree-climbing species of Collembola (Hypogastruridae) from Vancouver Island, British Columbia. *Can. Entomol.* 124: 405-407.
- Freckman, D. W. & Baldwin, J. G. 1990. Nematoda, pp. 155-200 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Frost, T. M. 1991. Porifera, pp. 95-124 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Garland, J. A. 1979. *Meleoma schwarzi*: an addition to the Canadian fauna (Neuropteroida: Planipennia: Chrysopidae). *Can. Entomol.* 111: 745-746.
- Garland, J. A. 1982. The taxonomy of Chrysopidae of Canada and Alaska (Insecta: Neuroptera). Ph.D. thesis, McGill University, Ste-Anne-de-Bellevue, Quebec. 418 pp.
- Garland, J. A. 1985. Identification of Chrysopidae in Canada, with bionomic notes (Neuroptera). *Can. Entomol.* 117: 737-762.
- Garrett, C. B. D. 1922. New Tipulidae from British Columbia (Diptera). *Proc. Entomol. Soc. Wash.* 24: 58-64.
- Garrett, C. B. D. 1925. Seventy new Diptera. Key to Pseudoleria, Helomyzidae, Tipulidae. Chironomidae, Dixinae, Orphnephilidae, Mycetophilidae. Cranbrook, B.C. 16 pp.
- Garthwaite, R. L. & Lawson, R. 1992. Oniscidea (Isopoda) of the San Francisco Bay area. *Proc. Calif. Acad. Sci.* 47: 303-328.
- Gertsch, W. J. and Sologlad, M. 1966. The scorpions of the *Vejois boreus* group (subgenus *Paruroctonus*) in North America (Scorpionida, Vejovidae). *Am. Mus. Novit.* 2278: 1-54.

- Goulet, H. 1992. The genera and subgenera of the sawflies of Canada and Alaska (Hymenoptera: Symphyta). The Insects and Arachnids of Canada. Part 20. Agri. Can. Res. Br. Publ. 1876: 235 pp.
- Goulet, H. & Huber, J. T. (eds.) 1993. Hymenoptera of the world: an identification guide to families. Agric. Can. Res. Br. Publ. 1894/E: 668 pp.
- Greene, J. F. 1971. A revision of the Nearctic species of the genus *Psammotettix* (Homoptera: Cicadellidae). *Smithson. Contr. Zool.* 74: 1-40.
- Gregson, J. D. 1956. The Ixodoidea of Canada. Can. Dept. Agric. Ottawa Publ. 930. 92 pp.
- Griffiths, G. C. D. 1983. Cyclorrhapha II (Schizophora: Calyptratae) Anthomyiidae. Flies of the Nearctic Region. Vol. 8, Pt. 2, No. 2: 161-288. E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart.
- Griffiths, G. C. D. 1984a. *Ibid.* Vol. 8, Pt. 2, No. 3: 289-408.
- Griffiths, G. C. D. 1984b. *Ibid.* Vol. 8, Pt. 2, No. 4: 409-600.
- Griffiths, G. C. D. 1987. *Ibid.* Vol. 8, Pt. 2, No. 6: 729-952.
- Griffiths, G. C. D. 1991. *Ibid.* Vol. 8, Pt. 2, No. 8: 1049-1240.
- Griffiths, G. C. D. 1992. *Ibid.* Vol. 8, Pt. 2, No. 9: 1241-1416.
- Griffiths, G. C. D. 1993. *Ibid.* Vol. 8, Pt. 2, No. 10: 1417-1632.
- Guppy, C. S., Shepard, J. H. & Kondla, N. 1994. Butterflies of conservation concern in British Columbia. *Can. Field Nat.* (submitted).
- Hamilton, K. G. A. 1980. Review of the Nearctic Idiocerini, excepting those from the Sonoran subregion (Rhynchota: Homoptera: Cicadellidae). *Can. Entomol.* 112: 811-848.
- Hamilton, K. G. A. 1982. The spittlebugs of Canada. Homoptera: Cercopidae. The Insects and Arachnids of Canada. Part 10. Res. Br. Agr. Can. Publ. 1740: 102 pp.
- Hamilton, K. G. A. 1983. Revision of the Macropsini and Neopsini of the New World (Rhynchota: Homoptera: Cicadellidae), with notes on intersex morphology. *Mem. Entomol. Soc. Can.* 123: 223 pp.
- Hamilton, K. G. A. 1985. Taxa of *Idiocerus* Lewis new to Canada (Rhynchota: Homoptera: Cicadellidae). *J. Entomol. Soc. Brit. Columbia.* 82: 59-65.
- Hamilton, K. G. A. 1994. Evolution of *Limotettix* Sahlberg (Homoptera: Cicadellidae) in peatlands, with descriptions of new taxa. *Mem. Entomol. Soc. Can.* (in press).
- Hamilton, K. G. A. & Ross, H. H. 1975. New species of grass-feeding Deltocephaline leafhoppers with keys to the Nearctic species of *Palus* and *Rosums* (Rhynchota: Homoptera: Cicadellidae). *Can. Entomol.* 107: 601-611.
- Harper, P. P. & Stewart, K. W. 1984. Plecoptera, pp. 182-260 (in Merritt, R. W. & Cummins, K. W. (eds.). An introduction to aquatic insects of North America (2nd edit.). Kendall/Hunt Publ. Co., Dubuque, Iowa, 722 pp.
- Harrington, H. B. 1962. A revision of the Sphaeriidae of North America (Mollusca: Relecypoda). *Univ. Mich. Mus. Zool. Misc. Publ.* 118: 74 pp.
- Hatch, M. H. 1933. Studies on the Leptodiridae (Catopidae) with descriptions of new species. *J.N.Y. Entomol. Soc.* 41: 187-239.
- Hatch, M. H. 1953. The Beetles of the Pacific Northwest. Part I: Introduction and Adephaga. *Univ. Wash. Publ. Biol.* 16(I): 340 pp.
- Hatch, M. H. 1957. The Beetles of the Pacific Northwest. Part II: Staphyliniformia. *Univ. Wash. Publ. Biol.* 16(II): 384 pp.
- Hatch, M. H. 1962. The Beetles of the Pacific Northwest. Part III: Pselaphidae and Diversicornia 1. *Univ. Wash. Publ. Biol.* 16(III): 503 pp.
- Hatch, M. H. 1965. The Beetles of the Pacific Northwest. Part IV: Macroductyles, Palpicornes and Heteromera. *Univ. Wash. Publ. Biol.* 16(IV): 268 pp.
- Hatch, M. H. 1971. The Beetles of the Pacific Northwest. Part V: Rhipicerioidea, Sternoxi, Phytophaga, Rhynchophora and Lamellicornia. *Univ. Wash. Publ. Biol.* 16(V): 662 pp.
- Heady, S. E. & Wilson, S. W. 1990. The planthopper genus *Prokelisia* (Homoptera: Delphacidae): morphology of female genitalia and copulatory behavior. *J. Kans. Entomol. Soc.* 63: 267-278.
- Henry, T. J. 1985. Two new species of *Ceratocapsus* from North America (Heteroptera: Miridae). *Proc. Entomol. Soc. Wash.* 87: 387-391.
- Henry, T. J. & Froeschner, R. C. (eds.) 1988. Catalog of the Heteroptera, or True Bugs, of Canada and the Continental United States. E.J. Brill, Leiden.
- Herman, L. H. 1964. Revision of *Orus*. II. Subgenera *Orus*, *Pycnorus* and *Nivorus* (Coleoptera: Staphylinidae). *Coleopt. Bull.* 19: 73-90.
- Herman, L. H. 1975. Revision and phylogeny of the monogeneric subfamily Pseudopsinae for the world (Staphylinidae, Coleoptera). *Bull. Am. Mus. Nat. Hist.* 155(3): 245-317.
- Hobbs, H. H. Jr., 1972. Crayfishes (Astacidae) of North and Middle America. Biota of Freshwater Ecosystems. U.S. Env. Prot. Agency, Water Pollution Control Research Service Indent. Manual. 9, 173 pp.
- Hobbs, H. H., III. 1991. Decapoda, pp. 823-858 (in Thorp, J. H. & Covich, A. P. (eds.) Ecology and Classification of North American Freshwater Invertebrates. Academic Press Inc., San Diego.
- Hodges, R. W., Dominick, T., Davis, D. R., Ferguson, D. C., Franclemont, J. G., Munroe, E. G. & Powell, J. A. (eds.) 1983. Check List of the Lepidoptera of America North of Mexico including Greenland. E.W. Classey Ltd., & Wedge Entomol. Res. Found., London.
- Hoff, C. C. 1958. List of the pseudoscorpions of North American north of Mexico. *Am. Mus. Novit.* 1875: 1-50.

- Hoffman, R. L. 1990. Diplopoda, pp. 835-860 (in) Dindal, D. L. (ed.) Soil Biology Guide, John Wiley & Sons, New York.
- Holland, W. J. 1919. The Moth Book. A popular guide to a knowledge of the moths of North America. Doubleday, Page & Co., Garden City, NY.
- Holmberg, R. G. & Buckle, D. J. 1970. Solpugida of Canada. Poster Paper. Joint meeting of Entomol. Soc. Can. & Entomol. Soc. Alberta, Banff, 9 Oct. 1990.
- Holsinger, J. R. & Shaw, D. P. 1987. *Stygobromus quatsinensis*, a new amphipod crustacean (Crangonyctidae) from caves on Vancouver Island, British Columbia, with remarks on zoogeographic relationships. Can. J. Zool. 65: 2202-2209.
- Hopping, R. 1933. New Coleoptera from western Canada IV. Can. Entomol. 65: 281-286.
- Howe, W. H. 1975. The Butterflies of North America. Doubleday & Co. Inc., Garden City, NY.
- Huckett, H. C. 1948. The subgenus *Phorbia* Robineau-Desvoidy in North America, genus *Hylemyia* sensu lat. (Diptera, Muscidae). Bull. Brooklyn Entomol. Soc. 42: 109-125.
- Hull, F. M. 1962. Robber flies of the world. The genera of the family Asilidae. Bull. Smithson. Inst. Pt.1: 430pp., Pt.2: 907 pp.
- Hull, F. M. 1973. Bee flies of the world. The genera of the family Bombyliidae. Smithson. Inst. Press, Washington, D.C.
- Illies, J. 1966. Katalog der rezenten Plecoptera. Das Tierreich 82. Walter de Gruyter & Co., Berlin, 632 pp.
- Jacot-Guillarmod, C. F. 1970-1986. Catalogue of the Thysanoptera of the World. Ann. Cape Prov. Mus. (Nat. Hist.) 7 Pts 1-6, 17 Pt.1.
- Jansson, A. 1972. Systematic notes and new synonymy in the genus *Cenocorixa* (Hemiptera: Corixidae). Can. Entomol. 104: 449-459.
- Jewett, Jr. S. G., 1959. The stoneflies (Plecoptera) of the Pacific Northwest. Oregon State Mon. Entomol. 95 pp.
- Kamp, J. W. 1979. Taxonomy, distribution, and zoogeographic evolution of *Grylloblatta* in Canada (Insecta: Notoptera). Can. Entomol. 111: 27-38.
- Kathman, R. D. 1989. Studies on the Tardigrada of Vancouver I., British Columbia. Ph.D. thesis, University of Victoria. 296 pp.
- Kathman, R. D. 1990a. Eutardigrada from Vancouver Island, British Columbia, Canada, including a description of *Platicrista cheleusis* n.sp. Can. J. Zool. 68: 1880-1895.
- Kathman, R. D. 1990b. *Isohysibius woodsae*, a new species of Eutardigrada (Tardigrada) from British Columbia. Can. Field Nat. 104: 293-294.
- Kathman, R. D. & Dastych, H. 1990. Some Echiniscidae (Tardigrada: Heterotardigrada) from Vancouver I., British Columbia, Canada. Can. J. Zool. 68: 699-706.
- Kathman, R. D. & Nelson, D. R. 1989. *Pseudodiphascon arrowsmithi*, a new species of tardigrade from British Columbia, Canada (Macrobiotidae: Eutardigrada: Tardigrada). J. Entomol. Soc. Brit. Columbia 86: 66-70.
- Kavanaugh, D. H. 1986. A systematic review of Amphizoid beetles (Amphizoidae: Coleoptera) and their phylogenetic relationships to other Adephaga. Proc. Cal. Acad. Sci. 44: 67-109.
- Kavanaugh, D. H. 1992. Carabid beetles (Insecta: Coleoptera: Carabidae) of the Queen Charlotte Islands, British Columbia. Mem. Calif. Acad. Sci. 16: 113 pp.
- Kelton, L. A. 1965. *Chlamydatus* Curtis in North America (Hemiptera: Miridae). Can. Entomol. 97: 1132-1144.
- Kelton, L. A. 1968. Revision of the North American species of *Slaterocoris* (Heteroptera: Miridae). Can. Entomol. 100: 1121-1137.
- Kelton, L. A. 1970. Four new species of *Trigonotylus* from North America (Heteroptera: Miridae). Can. Entomol. 102: 334-338.
- Kelton, L. A. 1971. Revision of the species of *Trigonotylus* in North America (Heteroptera: Miridae). Can. Entomol. 103: 685-705.
- Kelton, L. A. 1972. Descriptions of nine new species of *Dichroscytus* from North America (Heteroptera: Miridae). Can. Entomol. 104: 1459-1464.
- Kelton, L. A. 1978. The Anthocoridae of Canada and Alaska. Heteroptera: Anthocoridae. The Insects and Arachnides of Canada. Part 4. Agric. Can. Res. Branch Publ. 1639: 101 pp.
- Kelton, L. A. 1982. Descriptions of a new species of *Plagiognathus* Fieber, and additional records of European *Psallus salicellus* in the Nearctic region (Heteroptera: Miridae). Can. Entomol. 114: 169-172.
- Kelton, L. A. & Anderson, N. H. 1962. New Anthocoridae from North America, with notes on the status of some genera and species (Heteroptera). Can. Entomol. 94: 1302-1309.
- Kethley, J. 1990. Acarina: Prostigmata (Actiniedida), pp. 667-756 (in) Dindal, D. L. (ed.) Soil Biology Guide, John Wiley & Sons, New York.
- Kevan, D. K. McE. 1983a. A preliminary survey of known and potentially Canadian and Alaskan centipedes (Chilopoda). Can. J. Zool. 61: 2938-2955.
- Kevan, D. K. McE. 1983b. A preliminary survey of known and potentially Canadian millipedes (Diplopoda). Can. J. Zool. 61: 2956-2975.
- Kevan, D. K. McE. & Scudder, G. G. E. 1989. Illustrated Keys to the families of Terrestrial Arthropods of Canada. I. Myriapoda (Millipedes, Centipedes, etc.). Biol. Surv. Can. Tax. Ser. 1: 88 pp.
- Klemm, D. J. 1982. Leeches (Annelida: Hirudinea) of North America. U.S. Environ. Prot. Agency Off. Res. Dev. EPA-600/3-82-025: 177 pp.

- Klimaszewski, J. & Kevan, D. K. McE. 1985. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part I. The genus *Hemerobius* Linnaeus: systematics, bionomics and distribution. Mem. Lyman Entomol. Mus. & Res. Lab. 15: 1-119 pp.
- Klimaszewski, J. & Kevan, D. K. McE. 1987. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part II. The genus *Wesmaelius* Krüger. Neuroptera International 4: 153-204, 245-274.
- Klimaszewski, J. & Kevan, D. K. McE. 1988. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part III. The genus *Micromus* Rambur. Giornale Italiano di Entomologia 4: 31-76.
- Klimaszewski, J. & Kevan, D. K. McE. 1992. Review of Canadian and Alaskan brown lacewing flies (Neuroptera: Hemerobiidae) with a key to the genera. Part IV: The general *Megalomus* Rambur, *Boriomyia* Banks, *Psectra* Hagen and *Symphorobius* Banks. Ann. Transvaal Mus. 35: 435-457.
- Knight, H. H. 1927. Descriptions of fifteen new species of *Ceratopsus* (Hemiptera: Miridae). Ohio J. Sci. 27: 143-154.
- Knight, H. H. 1974. A key to species of *Phytocoris* Fallen belonging to the *Phytocoris junceus* Kngt. group of species (Hemiptera, Miridae). Iowa State J. Res. 49: 123-135.
- Kolasa, J. 1991. Flatworms: Turbellaria and Nemertea, 145-171 (in) Thorp, J. H. & Covich, A. P. (eds.) Ecology and Classification of North American Freshwater Invertebrates. Academic Press Inc., San Diego.
- Krantz, G. W. & Ainscough, B. D. 1990. Acarina: Mesostigmata (Gamasida), pp. 583-665 (in) Dindal, D. L. (ed.) Soil Biology Guide, John Wiley & Sons, New York.
- Krombein, K. V., Hurd Jr., P. D., Smith D. R. & Burks, B. D. 1979. Catalog of Hymenoptera in America north of Mexico. 3 vols. Smithsonian Institution Press, Washington, D.C.
- Lafontaine, J. D. & Poole, R. W. 1991. Noctuoidea, Noctuidae, Part Plusiinae Moths of America North of Mexico including Greenland. Fasc. 25. 1: 182 pp. Wedge Entomol. 3 Res. Found., Washington, D.C.
- La Rocque, A. 1953. Catalogue of the Recent Mollusca of Canada. Bull. Nat. Mus. Can. 129: 406 pp.
- LeConte, J. L. 1876 (in) LeConte, J. L. & Horn, G. H., The Rhynchophora of America north of Mexico. Proc. Am. Philos. Soc. 15: 455 pp.
- Leech, H. B. 1939. Three new species of Nearctic rare beetles from the Pacific coast (Coleoptera, Staphylinidae). Can. Entomol. 71: 258-261.
- Lindroth, C. H. 1961-1969. The Ground Beetles of Canada and Alaska. Parts 1-6. Opusc. Entomol. Suppl. 20,24,29,33,34 & 35.
- Llewellyn Jones, J. R. J. 1951. An annotated check list of the Macrolepidoptera of British Columbia. Entomol. Soc. Brit. Columbia Occ. Pap. 1: 148 pp.
- Lord, J. K. 1866. The naturalist in Vancouver Island and British Columbia. Richard Bentley, London. 2 vols.
- MacKay, M. R. 1951. Species of *Eupithecia* reared in the Forest Insect Survey in British Columbia (Lepidoptera: Geometridae). Can. Entomol. 83: 77-91.
- Madill, J. 1985. Synopsis Speciorum. Annelida: Hirudinea. Bibliographia Invertebratorum Aquaticorum Canadensium 5: 33 pp.
- Marshall, V. G., Reeves, R. M. & Norton, R. A. 1987. Catalogue of the Oribatida (Acari) of continental United States and Canada. Mem. Entomol. Soc. Can. 139, 418 pp.
- Mathews, G. B. 1938. Tardigrada from North America. Am. Midl. Nat. 19: 619-627.
- McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. & Wood, D. M. 1981. Manual of Nearctic Diptera. Volume 1. Agric. Can. Mon. 27: 674 pp.
- McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. & Wood, D. M. 1987. Manual of Nearctic Diptera. Volume 2. Agric. Can. Mon. 28: 1332 pp.
- McDunnough, J. H. 1940. New North American Geometridae with notes. III. Can. Entomol. 72: 90-103.
- McGuffin, W. C. 1977. Guide to the Geometridae of Canada (Lepidoptera). II. Subfamily Ennominae 2. Mem. Entomol. Soc. Can. 101: 191 pp.
- McGuffin, W. C. 1987. Guide to the Geometridae of Canada (Lepidoptera). II. Subfamily Ennominae 4. Mem. Entomol. Soc. Can. 138: 182 pp.
- McGuffin, W. C. 1988. Guide to the Geometridae of Canada (Lepidoptera). III, IV, and V. Subfamilies Archiearinae, Oenochrominae, and Geometrinae. Mem. Entomol. Soc. Can. 145: 56 pp.
- McKey-Fender, D. & Fender, W. M. 1982. *Arctiostrostus* (gen. nov.). Part I. The identity of *Plutellus perrieri* Benham, 1892 and its distribution in relation to glacial refugia. Megadrilogica 4(3): 81-88.
- McKey-Fender, D., Fender, W. M. & Marshall, V. G. 1994. Native earthworms from Vancouver Island and the Olympic Peninsula. Can. J. Zool. (in press).
- McMahon, R. F. 1991. Mollusca: Bivalvia, pp. 315-399 (in) Thorp, J. H. & Covich, A. P. (eds.) Ecology and Classification of North American Freshwater Invertebrates. Academic Press Inc., San Diego.
- Mead, F. W. & Kramer, J. P. 1982. Taxonomic study of the planthopper genus *Oliarus* in the United States (Homoptera: Fulgoroidea: Cixiidae). Trans. Am. Entomol. Soc. 107: 381-569.
- Meidinger, D. & Pojar, J. 1991. Ecosystems of British Columbia. B.C. Ministry of Forests, Victoria, B.C. 330 pp.
- Meinander, M. 1972. A revision of the family Coniopterygidae (Planipennia). Acta Zool. Fenn. 136: 1-357.
- Meinander, M. 1974. Coniopterygidae from western North America (Neuroptera). Entomol. Scand. 5: 217-232.
- Metcalf, Z. P. 1935-1962. General Catalogue of the Homoptera. Waverly Press, Baltimore, Md.

- Michailova, P. & Fischer, J. 1986. *Chironomus vancouveri* sp.n. from Canada (Diptera, Chironomidae). *Reichenbachia* 23: 99-106.
- Mickel, C. E. 1928. Biological and taxonomic investigations on the mutillid wasps. *Bull. U.S. Natl. Mus.* 143: 1-351.
- Millidge, A. F. 1978. The Erigonine spiders of North America. Part 8. The genus *Eperigone* Crosby and Bishop (Araneae, Linyphiidae). *Am. Mus. Novit.* 2885: 1-75.
- Millidge, A. F. 1981. The erigonine spiders of North America. Part 3. The genus *Scotinotylus* Simon (Araneae, Linyphiidae). *J. Arachnol.* 9: 167-213.
- Mockford, E. L. 1993. North American Psocoptera (Insecta). *Flora & Fauna Handbook No. 10.* 455 pp. Sandhill Crane Press, Inc., Gainesville, FL.
- Mound, L. A. & O'Neill, K. 1974. Taxonomy of the Merothripidae, with ecological and phylogenetic considerations (Thysanoptera). *J. Nat. Hist.* 8: 481-509.
- Muchmore, W. B. 1990a. Pseudoscorpionida, pp. 503-527 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Muchmore, W. B. 1990b. Terrestrial Isopoda, pp. 805-817 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Muma, M. H. 1951. The arachnid order Solpugida in the United States. *Bull. Am. Mus. Nat. Hist.* 97(2): 35-141.
- Muma, M. H. 1970. A synoptic review of North American, Central American, and West Indian Solpugida (Arthropoda: Arachnida). *Arthropods of Florida and Neighboring Land Areas* 5: 61 pp.
- Mundel, P. 1990. Chilopoda, pp. 819-833 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Munroe, E. G. 1951. The identity and generic position of *Chauliodes disjunctus* Walker (Megaloptera: Corydalidae). *Can. Entomol.* 83: 33-35.
- Munroe, E. G. 1953. *Cauliodes disjunctus* Walker: a correction, with descriptions of a new species and a new genus (Megaloptera: Corydalidae). *Can. Entomol.* 85: 190-192.
- Murray, C. L., Berry, T. M. & Gardner, J. 1993. Biodiversity Conservation Strategy for British Columbia - Discussion Paper on Strategy Development. Prepared by ESSA Ltd., Victoria and Vancouver, and Dovetail Consulting Inc., Vancouver, for the Inter-Ministry Biodiversity Group, Province of British Columbia, Victoria, 29 pp. and appendices.
- Needham, J. G., Traver, J. R. & Hsu, Y-C. 1935. The Biology of Mayflies, with a systematic account of North American species. *Comstock Publ. Co. Inc.*, Ithaca, NY 759 pp.
- Neitzel, D. A. & Frest, T. J. 1990. Survey of Columbia River Basin streams for Columbia Pebblesnail and Shortface Lanx. *Fisheries* 15(2): 2-3.
- Nelson, D. R. & Higgins, R. P. 1990. Tardigrada, pp. 393-419 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- Nimmo, A. P. 1991. Seven new species of *Limnephilus* from western North America with descriptions of female of *L. pallens* (Banks) (Trichoptera, Limnephilidae, Limnephilinae, Limnephilini). *Proc. Entomol. Soc. Wash.* 93: 499-508.
- Nimmo, A. P. & Scudder, G. G. E. 1979. An annotated checklist of the Trichoptera (Insecta) of British Columbia. *Syesis* 11(1978): 117-133.
- Nimmo, A. P. & Scudder, G. G. E. 1984. Supplement to an annotated checklist of the Trichoptera (Insecta) of British Columbia. *Syesis* 16(1983): 71-83.
- Norton, R. A. 1990. Acarina: Oribatida, pp. 779-803 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.
- O'Brien, C. W. & Wibmer, G. J. 1983. Family 135. Curculionidae (Second Series) (in) Arnett, Jr., R. A. (ed.) *Checklist of the Beetles of North and Central America and The West Indies*. *Flora & Fauna Publ.*, Gainesville, FL, 240 pp.
- O'Hara, J. E. 1984. *Baeomyia* n.g. (Diptera: Tachinidae): descriptions and notes about phylogenetic and zoogeographic relationships. *Can. J. Zool.* 62: 1387-1396.
- Oliver, D. R., Dillon, M. E. & Cranston, P. S. 1990. A catalog of Nearctic Chironomidae. *Agric. Can. Publ.* 1857/B: 89pp.
- Olmi, M. 1984. A revision of the Dryinidae (Hymenoptera). *Mem. Am. Entomol. Inst.* 37, pt 1: 1-946, pt 2: 947-1913.
- Oosthuizen, J. H. & Davies, R. W. 1993. A new species of *Theromyzon* (Rhynchobdellida: Glossiphoniidae), with a review of the genus in North America. *Can. J. Zool.* 71: 1311-1318.
- Otte, D. 1981. The North American Grasshoppers Volume I. Acrididae. Gomphocerinae and Acridinae. *Harvard Univ. Press*, Cambridge & London, 275 pp.
- Otte, D. 1984. The North American Grasshoppers Volume II. Acrididae. Oedipodinae. *Harvard Univ. Press*, Cambridge & London, 366 pp.
- Parfin, S. I. & Gurney, A. B. 1956. The spongilla-flies, with special reference to those of the Western Hemisphere (Sisyrida/Neuroptera). *Proc. U.S. Natl. Mus.* 105: 421-529.
- Parker, S. P. (ed.) 1982. *Synopsis and Classification of Living Organisms*. McGraw-Hill Book Co., New York.
- Parshley, H. M. 1921. A report on some Hemiptera from British Columbia. *Proc. Entomol. Soc. Brit. Columbia* 18: 13-24.
- Pennak, R. W. 1989. *Freshwater Invertebrates of the United States*. Protozoa to Mollusca. 3rd Edit. Wiley, New York.
- Penny, N. D. 1977. A systematic study of the family Boreidae (Mecoptera). *Univ. Kansas Sci. Bull.* 51(5): 141-217.
- Peterson, B. V. 1970. The *Prosimulium* of Canada and Alaska (Diptera: Simuliidae). *Mem. Entomol. Soc. Can.* 69: 1-216.
- Philips, J. R. 1990. Acarina: Astigmata (Acaridida), pp. 757-778 (in) Dindal, D. L. (ed.) *Soil Biology Guide*, John Wiley & Sons, New York.

- Platnick, N. I. & Dondale, C. D. 1992. The ground spiders of Canada and Alaska. Araneae: Gnaphosidae. The Insects and Arachnids of Canada. Part 19. Agric. Can. Publ. 1875: 297 pp.
- Poinar, G. O. Jr., 1991. Nematoda and Nematomorpha, pp. 249-283 (in) Thorp, J. H. & Covich, A. P. (eds.) Ecology and Classification of North American Freshwater Invertebrates. Academic Press Inc., San Diego.
- Provancher, L'Abbé L. 1888. Additions et corrections au Volume II de la Faune entomologique du Canada traitant des Hyménoptères. C. Darveau, Quebec.
- Pulawski, W. Z. 1988. Revision of North American *Tachyspex* wasps including Central America and Caribbean species (Hymenoptera: Specidae). Mem. Calif. Acad. Sci. 18: 211 pp.
- Puthz, V. 1973. Revision der nearktischen Steninenfauna (I). Neue nordamerikanische Stenus (s.str. + *Nestus*) Arten. Entomol. Blätter. 69(3): 189-209.
- Puthz, V. 1974. A new revision of the Nearctic *Edaphus*-species and remarks on other North American Euaesthetinae (Coleoptera, Staphylinidae). Rev. Suisse Zool. 81: 911-932.
- Razafimahatratra, V. 1980. A revision of the genus *Deraeocoris* Kirschbaum (Heteroptera: Miridae) from western America north of Mexico. Ph.D. diss., Oregon State Univ., Corvallis.
- Razafimahatratra, V. & Lattin, J. D. 1982. Five new species and new synonymies for the genus *Deraeocoris* (Heteroptera: Miridae) from western North America. Pan-Pac. Entomol. 58: 352-364.
- Rehn, J. A. G. 1937. A new subspecies of *Psoloessa delicatula* (Orthoptera: Acrididae, Acridinae). Trans. Am. Entomol. Soc. 63: 325-332.
- Rehn, J. A. G. 1942. On the locust genus *Psoloessa* (Orthoptera; Acrididae; Acridinae). Trans. Am. Entomol. Soc. 68: 167-237.
- Reiss, F. 1985. Die panamikanische verbreitete Tanytarsini-Gattung *Skutzia* gen. nov. (Diptera, Chironomidae). Spixiana Suppl. (Muench.) 11: 173-178.
- Ricker, W. E. 1943. Stoneflies of southwestern British Columbia. Indiana Univ. Publ. Sci. Ser. 12: 1-145.
- Ricker, W. E. 1959. The species of *Isocapnia* Banks (Insecta, Plecoptera, Nemouridae). Can. J. Zool. 37: 639-653.
- Ricker, W. E. 1965. New records and descriptions of Plecoptera (Class Insecta). J. Fish. Res. Bd. Canada 22: 475-501.
- Ricker, W. E. & Scudder, G. G. E. 1976. An annotated checklist of the Plecoptera (Insecta) of British Columbia. Syesis 8(1975): 333-348.
- Ross, H. H. 1929. A study of Marlatt's group I of the genus *Pontania* with descriptions of four new species (Hymenoptera: Tenthredinidae). Proc. Entomol. Soc. Wash. 31: 91-97.
- Ross, H. H. 1937. Studies of Nearctic Aquatic Insects. I. Nearctic alder flies of the genus *Sialis* (Megaloptera, Sialidae). Bull. Ill. Nat. Hist. Surv. 21: 57-78.
- Ross, H. H. & Spencer, G. J. 1952. A preliminary list of the Trichoptera of British Columbia. Proc. Entomol. Soc. Brit. Columbia 48: 43-51.
- Rusek, J. 1974. Zur Taxonomie einiger Gattungen der Familie Acerentomidae (Insecta, Protura). Acta ent. bohemoslov. 71: 260-281.
- Rusek, J. 1976. New Onychiuridae (Collembola) from Vancouver Island. Can. J. Zool. 54: 19-41.
- Rusek, J. 1982. *Multivesicula* gen.n. from the subfamily Tullbergiinae (Collembola: Onychiuridae). Vestn. cesk. Spol. Zool. 46: 33-44.
- Rusek, J. 1991. Three new species of Pseudachorutini (Collembola: Neanuridae). Acta Soc. Zool. Bohemoslov. 55(3-4): 120-129.
- Rusek, J. & Marshall, V. G. 1977. *Tetracanthella pacifica* sp.n. (Collembola: Isotomidae) from British Columbia. Can. Entomol. 108: 759-765.
- Saether, O. A. 1969. Some Nearctic Podonominae, Diamesinae, and Orthoclaadiinae (Diptera: Chironomidae). Bull. Fish. Res. Bd. Canada. 170: 1-154.
- Saether, O. A. 1975. Two new species of *Heterotanytarsus* Spärck, with keys to Nearctic and Palaearctic males and pupae of the genus (Diptera: Chironomidae). J. Fish. Res. Bd. Can. 32: 259-270.
- Saether, O. A. & Sublette, J. E. 1983. A review of the genera *Doithrix* n.gen., *Georthocladius* Strenzke, *Parachaetocladius* Wülker and *Pseudorthocladius* Goetghebuer (Diptera: Chironomidae, Orthoclaadiinae). Entomol. Scand. Suppl. 20: 1-100.
- Scheller, U. 1984. Pauropoda (Myriapoda) from Canada. Can. J. Zool. 62: 2074-2091.
- Scheller, U. 1985. Taxonomic and distributional notes on pauropods from the United States (Myriapoda, Pauropoda: Pauropodidae, Eurypauropodidae). Entomol. scand. 16: 237-257.
- Scheller, U. 1986. Beringian Pauropoda (Myriapoda). Entomol. scand. 17: 363-391.
- Scheller, U. 1990. Pauropoda pp. 861-890 (in) Dindal, D. L. (ed.) Soil Biology Guide, John Wiley & Sons, New York.
- Schmid, R. 1952. Le groupe de *Chilostigma* (Trichopt., Limnoph.) Arch. Hydrobiol. 47: 75-163.
- Schuh, R. T. & Schwartz, M. D. 1988. Revision of the New World Pilophorini (Heteroptera: Miridae: Phyllinae). Bull. Am. Mus. Nat. Hist. 187(2): 101-201.
- Schwartz, M. D. 1984. A revision of the black grass bug genus *Irbisia* Reuter (Heteroptera: Miridae). J.N.Y. Entomol. Soc. 92: 193-306.
- Schwartz, M. D. & Lattin, J. D. 1984. *Irbisia knighti*, a new mirid plant bug (Heteroptera: Miridae) from the Pacific Northwest. J.N.Y. Entomol. Soc. 9: 413-417.
- Schwert, D. P. 1990. Oligochaeta: Lumbricidae, pp. 341-356 (in) Dindal, D. L. (ed.) Soil Biology Guide, John Wiley & Sons, New York.

- Scott, J. A. 1986. The Butterflies of North America. A natural history and field guide. Stanford University Press, Stanford, CA.
- Scudder, G. G. E. 1961. Some Heteroptera new to British Columbia. *Proc. Entomol. Soc. Brit. Columbia* 58: 26-29.
- Scudder, G. G. E. 1963. Studies on the Canadian and Alaskan Fulgoromorpha (Hemiptera). 1. the genera *Achrotile* Fieber and *Laccocera* Van Duzee (Delphacidae). *Can. Entomol.* 95: 167-177.
- Scudder, G. G. E. 1976. An annotated checklist of the Ephemeroptera (Insecta) of British Columbia. *Syesis* 8(1975): 311-315.
- Scudder, G. G. E. 1977. An annotated checklist of the aquatic and semiaquatic Hemiptera (Insecta) of British Columbia. *Syesis* 10: 31-38.
- Scudder, G. G. E. 1981. Two new species of Lygaeinae (Hemiptera: Lygaeidae) from Canada. *Can. Entomol.* 113: 747-753.
- Scudder, G. G. E. 1984. Two new genera of Rhyparochrominae (Hemiptera: Lygaeidae) from North America. *Can. Entomol.* 116: 1293-1300.
- Scudder, G. G. E. 1985. Heteroptera new to Canada. *J. Entomol. Soc. Brit. Columbia* 82: 66-71.
- Scudder, G. G. E. 1986. Additional Heteroptera new to British Columbia. *J. Entomol. Soc. Brit. Columbia* 83: 63-65.
- Scudder, G. G. E. 1987. Aquatic and semiaquatic Hemiptera of peatlands and marshes in Canada. *Mem. Entomol. Soc. Can.* 140: 65-98.
- Scudder, G. G. E. 1991. The stilt-bugs (Hemiptera: Berytidae) of Canada. *Can. Entomol.* 123: 425-438.
- Scudder, G. G. E. 1992. Threatened and endangered invertebrates of the South Okanagan pp. 47-57 (in) Rautio, S. (ed.) *Community Action for Endangered Species*. Fed. B.C. Nat. & Northwest Wildlife Pres. Soc., Vancouver, B.C.
- Scudder, G. G. E. 1993. Geographic distribution and biogeography of representative species of xeric grassland-adapted Nearctic Lygaeidae in western North America (Insecta: Heteroptera). *Mem. Entomol. Soc. Can.* 165: 75-113.
- Scudder, G. G. E. 1994. Terrestrial and freshwater invertebrates of British Columbia: rare species status and priorities for inventory. Resource Inventory Committee, Victoria (in press).
- Scudder, G. G. E., Cannings, R. A. & Stuart, K. M. 1977. An annotated checklist of the Odonata (Insecta) of British Columbia. *Syesis* 9(1976): 143-161.
- Scudder, G. G. E., Kevan, D. K. McE. & Bousfield, E. L. 1979. Higher Classification, pp. 235-240 (in) Danks, H. V. (ed.) *Canada and its Insect Fauna*. *Mem. Entomol. Soc. Can.* 108.
- Scudder, G. G. E. & Mann, K. H. 1969. The leeches of some lakes in the Southern Interior Plateau region of British Columbia. *Syesis* 1(1968): 203-209.
- Shelley, R. M. 1990. A new milliped of the genus *Metaxycheir* from the Pacific coast of Canada (Polydesmida: Xystodesmidae), with remarks on the tribe Chonaphini and the western Canadian and Alaskan diplopod fauna. *Can. J. Zool.* 68: 2310-2322.
- Sladen, F. W. L. 1919. Notes on the Canadian representations of British species of bees. *Can. Entomol.* 51:124-130.
- Slater, J. A. 1988. The Ozophorini of the western United States and Baja California (Hemiptera: Lygaeidae). *J.N.Y. Entomol. Soc.* 96: 91-109.
- Slater, J. A. & Baranowski, R. M. 1978. How to know the true bugs (Hemiptera-Heteroptera). Wm. C. Brown Co., Dubuque, Iowa.
- Sleeper, E. L. 1955. New Curculionidae from British Columbia. I (Coleoptera: Rhynchophora). *Pan-Pac. Entomol.* 31: 155-162.
- Sleeper, E. L. 1957a. Notes on the genus *Macrorhoptus* LeConte (Coleoptera: Curculionidae: Anthonomiinae). *Ohio J. Sci.* 57: 70-74.
- Sleeper, E. L. 1957b. New Curculionidae (Coleoptera) from British Columbia. II. *Pan-Pac. Entomol.* 33: 127-131.
- Slobodkin, L. B. & Bossert, P. E. 1991. The Freshwater Cnidaria - or Coelenterates, pp. 125-143 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Smith, A. G. 1970. Western land snails. *Malacologia* 10: 39-46.
- Smith, I. M. 1979. A review of water mites of the family Anisitsiellidae (Prostigmata: Lebertioidea) from North America. *Can. Entomol.* 111: 529-550.
- Smith, I. M. 1983a. Description of *Cowichania interstitialis* n.gen., n.sp., and proposal of Cowichaniinae n.subfam., with remarks on phylogeny and classification of Hydryphantidae (Acari: Parasitengona: Hydryphantoidea). *Can. Entomol.* 115: 523-527.
- Smith, I. M. 1983b. Descriptions of two new species of *Acalyptonotus* from western North America, with a new diagnosis of the genus based upon larvae and adults, and comments on phylogeny and taxonomy of Acalyptonotidae (Acari: Parasitengona: Arrenuroidea). *Can. Entomol.* 115: 1395-1408.
- Smith, I. M. 1989a. Description of deutonymphs and adults of *Oregonacarus rivulicolus* gen. nov., sp.nov., (Acari: Lebertioidea: Anisitsiellidae). *Can. Entomol.* 121: 533-541.
- Smith, I. M. 1989b. North American water mites of the family Momoniidae Viets (Acari: Arrenuroidea). I. Description of adults of *Cyclomonomia andrewi* gen. nov., sp.nov., and key to world genera and subgenera. *Can. Entomol.* 121: 543-549.
- Smith, I. M. 1991. Water mites (Acari: Parasitengona: Hydrachnida) of spring habitats in Canada pp. 141-167 (in) Williams, D. D. & Danks, H. V. (ed.) *Arthropods of springs, with particular reference to Canada*. *Mem. Entomol. Soc. Can.* 155: 217 pp.
- Smith, I. M. 1992. North American species of the genus *Chelomideopsis* Romijn (Acari: Arrenuroidea: Athienemanniidae). *Can. Entomol.* 124: 451-490.
- Smith, I. M. & Cook, D. R. 1991. Water mites, pp. 523-592 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Spencer, G. J. 1942. A preliminary list of the Neuroptera of British Columbia. *Proc. Entomol. Soc. Brit. Columbia* 38: 23-28.

- Spencer, G. J. 1948a. A preliminary list of Tipulidae from British Columbia (Diptera). Proc. Entomol. Soc. Brit. Columbia 44: 19-21.
- Spencer, G. J. 1948b. Some records of Collembola from British Columbia. Proc. Entomol. Soc. Brit. Columbia 44: 22.
- Spencer, G. J. 1952. The 1951 status of our knowledge of the insects of British Columbia. Proc. Entomol. Soc. Brit. Columbia 48: 36-41.
- Stange, L. A. 1970. Revision of the ant-lion tribe Brachynemurini of North America (Neuroptera: Myrmeleontidae). Univ. Calif. Publ. Entomol. 55: 1-192.
- Stannard, Jr., L. J. 1957. The phylogeny and classification of the North American genera of the suborder Tubulifera (Thysanoptera). Ill. Biol. Monogr. 25: 200 pp.
- Stannard, Jr., L. J. 1968. The thrips or Thysanoptera of Illinois. Ill. Nat. Hist. Surv. Bull. 29(4): 215-552.
- Stark, B. P., Szczytko, S. W. & Baumann, R. W. 1986. North American stoneflies (Plecoptera): systematics, distribution and taxonomic references. Great Basin Nat. 46: 383-397.
- Stewart, K. W. & Stark, B. P. 1988. Nymphs of North American stonefly genera (Plecoptera). Entomol. Soc. Am. Thomas Say Found. 12: 1-460.
- Stone, A., Sabrosky, C. W., Wirth, W. W., Foote, R. H. & Coulson, J. R. 1965. A catalog of the Diptera of America north of Mexico. U.S. Dept. Agric. Handbook 276: 1696 pp.
- Stonedahl, G. M. 1984. Two new conifer-inhabiting *Phytocoris* from western North America (Hemiptera: Miridae). Pan-Pac. Entomol. 60: 47-52.
- Stonedahl, G. M. 1988. Revision of the mirine genus *Phytocoris* Fallén (Heteroptera: Miridae) for western North America. Bull. Am. Mus. Nat. Hist. 188(1): 1-257.
- Strayer, D. L. & Hummon, W. D. 1991. Gastrotricha, pp. 173-185 (in) Thorp, J. H. & Covich, A. P. (eds.) Ecology and Classification of North American Freshwater Invertebrates. Academic Press Inc., San Diego.
- Sturm, H. 1991. Three genera of Machilidae from North America and Mexico: *Leptomachilis*, *Meximachilis* and *Mesomachilis*, with description of two new sense organs in *Mesomachilis* males (Insecta, Archaeognatha). Steenstrupia 17(2): 53-80.
- Sturm, H. & Bach de Roca, C. 1992. New American meinertellidae (Archaeognatha, Machiloidea). Pan-Pac. Entomol. 68: 174-191.
- Taylor, D. W. 1970. Western freshwater molluscs. Malacologia 10: 33-34.
- Te, G. A. & Clarke, A. H. 1985. *Physella (Physella) wrighti* tadpole snail from Laird Hot Springs. B.C. Can. Field Nat. 99: 295-299.
- Teskey, H. J. 1990. The Horse Flies and Deer Flies of Canada and Alaska. The Insects and Arachnids of Canada. Part 16. Agric. Can. Publ. 1838: 381 pp.
- Thomasson, G. L. & Post, R. L. 1966. North Dakota Tubulifera (Thysanoptera). N. D. Ins. Publ. 6, Dept. Entomol., Agric. Expt. Sta. N. D. State Univ., 58 pp.
- Threatful, D. L. 1982. Butterflies of Mount Revelstoke and Glacier National Parks, British Columbia, Canada. Parks Canada. Western Region, 20 pp.
- Tourlotte, G. I. 1974. Studies on the biology and ecology of the northern scorpion, *Paruroctonus boreus* (Girard). Great Basin Nat. 34: 167-179.
- Turgeon, D. D., Bogan, A. E., Coan, E. V., Emerson, W. K., Lyons, W. G., Pratt, W. L., Roper, C. F. E., Scheltema, A., Thompson, F. G. & Williams, J. D. 1988. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks. Am. Fish. Soc. Spec. Publ. 16: 277.
- United Nations Environment Programme 1992. Convention on Biological Diversity, June 1992. Environmental Law & Institutions Programmes Activity Centre, Nairobi, 52 pp.
- Usinger, R. L. 1938. Review of the genus *Gastroles* (Lygaeidae, Hemiptera). Proc. Calif. Acad. Sci. (4) 23: 289-301.
- Van Name, W. G. 1936. The American Land and Fresh-water Isopod Crustacea. Bull. Am. Mus. Nat. Hist. 71: 1-535.
- Vickery, V. R. & Kevan, D. K. McE. 1985. The grasshoppers, crickets, and related insects of Canada and adjacent regions. Ulonata: Dermaptera, Chelentoptera, Notoptera, Dictuoptera, Grylloptera, and Orthoptera. The Insects and Arachnids of Canada Part 14. Agric. Canada, Res. Branch Publ. 1777: 918 pp.
- Vickery, V. R. & Scudder, G. G. E. 1987. The Canadian Orthopteroid insects summarized and updated, including tabular checklist and ecological notes. Proc. Entomol. Soc. Ont. 118: 25-45.
- Viereck, H. L. 1904. Synopsis of bees of Oregon, Washington, British Columbia and Vancouver - III. Can. Entomol. 36: 189-196, 221-232.
- Viereck, H. L. 1905. Synopsis of bees of Oregon, Washington, British Columbia and Vancouver - IV. Can. Entomol. 37: 277-287.
- Viereck, H. L. 1916. New species of North American bees of the genus *Andrena* from west of the 100th meridian contained in the collections of the Academy of Natural Sciences of Philadelphia. Proc. Acad. Nat. Sci. Phila. 68: 550-608.
- Viereck, H. L. 1924. Prodomus of *Andrena*, a genus of bees. Can. Entomol. 56: 19-24, 28-32, 76-81, 237-244.
- Vockeroth, J. R. 1980. A review of the Nearctic species of *Melangyna* (*Meligramma*) Frey (Diptera: Syrphidae). Can. Entomol. 112: 775-778.
- Vockeroth, J. R. 1990. Revision of the Nearctic species of *Platycheirus* (Diptera: Syrphidae). Can. Entomol. 122: 659-766.
- Vockeroth, J. R. 1992. The Flower Flies of the subfamily Syrphinae of Canada, Alaska, and Greenland. Diptera: Syrphidae. The Insects and Arachnids of Canada Part 18. Agric. Can. Publ. 1867: 456 pp.
- Walker, E. M. 1902. The Canadian species of *Trimerotropis*. Can. Entomol. 34: 1-11.

- Walker, E. M. 1906. Records in Orthoptera from the Canadian Northwest. *Can. Entomol.* 38: 55-59.
- Walker, E. M. 1953. The Odonata of Canada and Alaska. Volume 1. Part I: General. Part II: Zygoptera - Damselflies. University of Toronto Press, Toronto, 292 pp.
- Walker, E. M. 1958. The Odonata of Canada and Alaska. Volume 2. Part III: The Arisoptera - Four Families. University of Toronto Press, Toronto, 318 pp.
- Walker, E. M. & Corbet, P. S. 1975. The Odonata of Canada and Alaska. Volume 3. Part III: The Arisoptera - Three Families. University of Toronto Press, Toronto & Buffalo, 307 pp.
- Wallace, R. & Snell, T. 1991. Rotifera, pp. 187-248 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Walley, G. S. 1929. Two new species of *Eremocoris* with notes and a key to the species of *Peritrechus* (Hemipt., Lygaeidae). *Can. Entomol.* 61: 41-44.
- Wallis, J. B. 1961. The Cicindelidae of Canada. Univ. Toronto Press, Toronto.
- West, R., Dondale, C. D. & Ring, R. A. 1984. A revised checklist of the spiders (Araneae) of British Columbia. *J. Entomol. Soc. Brit. Columbia* 81: 80-98.
- West, R., Dondale, C. D. & Ring, R. A. 1988. Additions to the revised checklist of the spiders (Araneae) of British Columbia. *J. Entomol. Soc. Brit. Columbia* 85: 77-86.
- Whiteaves, J. F. 1906. Notes on some land and fresh-water shells from British Columbia. *Ottawa Nat.* 20: 115-119.
- Whittaker, O. 1930. Some new species and a new genus of parasitic Hymenoptera from British Columbia. *Proc. Entomol. Soc. Wash.* 32: 67-76.
- Wiggins, G. B. 1977. Larvae of the North American caddisfly genera (Trichoptera). University of Toronto Press, Toronto & Buffalo, 401 pp.
- Wigle, M. J. & Thommasen, H. V. 1990. Ephemeroptera of the Bella Coola and Owikeno L. watersheds, British Columbia central coast. *J. Entomol. Soc. Brit. Columbia* 87: 7-15.
- Wilkinson, C. & Scoble, M. J. 1979. The Nepticulidae (Lepidoptera) of Canada. *Mem. Entomol. Soc. Can.* 107: 129 pp.
- Williams, W. D. 1970. A revision of North American Epigean species of *Asellus* (Crustacea: Isopoda). *Smithson. Contr. Zool.* 49: 1-79.
- Williamson, C. E. 1991. Copepoda, pp. 787-822 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press Inc., San Diego.
- Wilson, S. W. 1982. The planthopper genus *Prokelisia* in the United States (Homoptera: Fulgoroidea: Delphacidae). *J. Kans. Entomol. Soc.* 55: 532-546.
- Wong, H. R. & Milliron, H. E. 1972. A Canadian species of *Susana* on western juniper (Hymenoptera: Tenthredinidae). *Can. Entomol.* 104: 1025-1028.
- Wong, H. R. & Ross, H. H. 1960. New Nearctic species of the genus *Pristiphora* Latreille (Hymenoptera: Tenthredinidae). *Can. Entomol.* 92: 193-198.
- Wood, D. M., Dang, P. T. & Ellis, R. A. 1979. The Mosquitoes of Canada. Diptera: Culicidae). *The Insects and Arachnids of Canada. Part 6. Agric. Can. Publ.* 1686: 390 pp.
- Wood, T. S. 1991. Bryozoa, pp. 481-499 (in) Thorp, J. H. & Covich, A. P. (eds.) *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press, Inc., San Diego.
- Zavortink, T. J. 1972. Mosquito studies (Diptera, Culicidae). XXVIII. The New World species formerly placed in *Aedes* (*Finlaya*). *Contr. Am. Entomol. Inst.* 8(3): 1-206.



Recycled Paper

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00771 1302

Contents

Issued April 1994

ISSN #0071-0733

| | |
|-----------------------|----|
| Abstract | 3 |
| Introduction | 3 |
| Taxonomic List | 4 |
| Table 1 | 79 |
| Acknowledgments | 80 |
| Notes | 80 |
| References | 81 |